With the Compliments of the Director,

Royal Botanic Gardens, Kew.

Royal Botanic Gardens, Kew.

Mar. 30, 1906.

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.B95
1901

Kew.

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

1901.

LONDON:
PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,
By DARLING & SON, Ltd., 34-40, Bacon Street, E.

And to be purchased, either directly or through any Bookseller, from
WYMAN and SONS, Ltd., Fetter Lane, E.C.,
or OLIVER & BOYD, Edinburgh;
or E. PONSONBY, 116, Grafton Street, Dublin.

1901.

Price Three Shillings.

Mo. Bot. Garden
1906

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ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

Nos. 169-171.] JANUARY—MARCH. [1901.

I.—A LIST OF THE COLLECTORS WHOSE PLANTS ARE IN THE HERBARIUM OF THE ROYAL BOTANIC GARDENS, KEW, TO 31st DECEMBER, 1899.

Probably no portion of Alphonse de Candolle's "*La Phytographie*" is so much consulted as that which deals with the various herbaria and their contents. While engaged in its compilation the author asked Mr. Bentham to draw up a list of the principal contributors to the Kew Herbarium for use in the book. Mr. Bentham replied in effect that it was impossible. This answer caused the following paragraph to be written :—

"Kew (Jardin Royal de). Pour les deux herbiers, celui de Sir W. et Sir Jos. Hooker et celui de M. Bentham, qui ont formé la base de l'immense herbier actuel, il n'existait pas de catalogues ou registres d'entrée. J'ai relevé sur l'époque antérieure à 1856 beaucoup de détails tirés de Lasègue, Mus. Deless. p. 325, A. Gray, Amer. Journ. 1840, de lettres de M. Bentham, de Sir Joseph Hooker, et d'autres sources occasionelles. A dater de 1856, les *Reports* ont donné des informations de plus en plus précises sur l'accroissement de l'herbier, qui doit être le plus riche de tous en espèces differentes et en espèces rares, décrites par les auteurs. J'espère avoir indiqué à peu près tout les herbiers de botanistes connus qui s'y trouvent incorporés, mais un grand nombre de collections de voyageurs y sont aussi, sans qu'il m'ait été possible de les passer en revue pour en extraire celles dont il aurait convenu de parler ici. Ce sont souvent des collections uniques, de voyageurs anglais, et celles-là sont indiquées dans les ouvrages redigés à Kew. Quant aux autres collections de plantes numérotées, on se trompera rarement si l'on part de l'idée qu'elles y sont, même lorsque mes documents ne m'ont pas permis de les signaler."

ALPH. DE CANDOLLE, "La Phytographie," p. 385.

7528—1375—12/1900 Wt 61 D & S—29

The following list is an attempt to give an enumeration of all the collectors whose plants form part of the Kew herbarium, so far as the records themselves allow. Since the spring of 1863 a general register of all parcels of plants has been kept, and this has been the principal source of information; in many cases, however, particulars of the actual collector are not supplied, but only the name of the donor; it is therefore quite possible that errors from this source have crept into the list, although care has been employed to guard against them.

For the earlier period, that namely, during the private possession by Sir W. J. Hooker and Mr. Bentham, the first step taken was to search the books of lists which both those botanists kept as accounts of their determinations and collectors' numbers, but this did not carry the work very far; therefore, by the help of Sir Joseph Hooker, the whole of the correspondence of his father was gone over, and the botanical correspondents' letters looked up to see if they sent plants, or only wanted help, or supplied botanical news. In this way the present list has been produced; it cannot be guaranteed as being complete, inasmuch as the sources of information are themselves incomplete. Moreover, there is no detailed record of the plants exchanged or presented to other herbaria, so that, though the collections here named were once here, they may have since been transferred to other possessors.

The general scope of each collector's gatherings is indicated by localities, and the aggregate number of specimens, so far as can be ascertained; where the number cannot be obtained, or if inconsiderable, it is not specified. The dates are those when received at Kew.

The alphabetical list of contributions is followed by a geographical arrangement based on that in use in the Herbarium.

B. D. J.

September 19th, 1900.

Abbott, Dr. W. L. Aldabra, 1894. 57.

Adam, Sir Frederic, Bart. India, 1837.

Adamson, Frederick M. Australia, 1854. n. 101–231; 1–514.

Adamović, Lujo. Servia, 1895–97, 324; Bulgaria, 700.

Adlam, R. W. Natal, 1886–94. 91.

Agardh, Carl Adolf. (Algae) 1824 → ?

Agardh, Jacob Georg. (Algae) 1839.

Aitchison, James Edward Tierney. Ireland, 1867–69; Punjaub, 1867, 322; N.W. India, 1872, 289; Afghanistan, 1879–83, 1446.

Alboff, Nicola. Transcaucasia, 1897. 32.

Aldridge, Arthur. Ichang. 1891–94.

Alcock, Lady. Pekin, 1868.

Alcock, Sir Rutherford. Pekin, 1860–66.

Alexander, Dr. See **Prior, Dr., R.C.A.**

Alexander, William Thomas. China, 1848–57 ?

Allcard, John. (Cult. Orchids.) 1836.

Allemão, Freire. Brazil, 1861.

Allen, Timothy Field. N. America (Characeae) fasc. 1–7. 1882–95. 70.

Allen, Dr. O. D. Cascade Mountains, 1898–99. (n. 211–215.) 230 ?

Allison, M. S. Natal, 1891. 70.

Anderson, Charles. Damaraland, 1862–64.

Anderson, Charles L. Nevada ; cf. Gray, A. ; Farlow & Eaton.

Anderson, Isaac. See **Anderson-Henry, I.**

Anderson, James. Australia, 1832.

Anderson, Dr. John. Yunnan, 1872. 264.

Anderson-Henry, Isaac. 1850–73. (Cult. plants.)

Anderson, Robert. Magellan Straits, 1850–53.

Anderson, Thomas. India, Suez, 1861–70.

Anderson, William. Britain, 1843.

Anderson, Nils Johan, 1856–74. Sweden, 900 ; Lapland, 320 ; Spitsbergen, 107 ; Galapagos, — ; Arctic (Mosses), 205.

André, Edouard. Bolivia, Columbia, 1885–92.

Andrews, —. Australia (Lake Eyre), 1875. 271.

Andrews, J. L. Williams. Patagonia, Argentina, 1887–91. 153.

Andrews, William. Ireland, 1841–53.

Andrieux, G. Mexico, 18—. 382, etc.

Annesley, Capt. Oliver Francis Theodore. Aden, 1876.

Ansell, John. 1840. Britain.

Ansted, Prof. David Thomas. 1855. West Indies.

Anthony, A. W. Lower California, 1898. 300.

Anzi, Martino. Italy (Lichens), 1874. 1112. (Lichenes langobard., 578 ; L. Ital. sup., 360 ; L. veneti, 174).

Aplin, T. H. Shan States, 1888. 94.

Appleton, Capt. Henry. Baluchistan, 1884. 43.

Appun, Carl Ferdinand. British Guiana, 1863–67. 914? (Incl. n. 199–400, 1419–1703.)

Archangeli, Giovanni. Italy, 1878–79. 128, etc.

Archer, William. Australia. (Herb.)

Arderne, Ralph H. Cape, ——.

Arechavaleta, José. Montevideo, 1871. 191; Uruguay, 1897. 58 (Compositae.)

Areschoug, Fredrik Wilhelm Christian. Sweden, 1864–83. 4 fasc. Algae, 104.

Armitage, C. H. Gold Coast, 1898. Ten rubber-yielding plants.

Armitage, Edward. Algeria, 1893.

Armstrong, Sir Alexander. Banks Island, New Hebrides; Port Essington, 1842. About 100 (Herb. Bentham).

Armstrong, Dr., and Miss Armstrong. Natal, 1864; c. 330; New Zealand, 1867. 49.

Árnasa, Jón. Iceland, ——.

Arnold, Dr. F. C. G. Europe (Lichens), c. 1776.

Arnot, David. Cape, Colesberg, 1860–63.

Arnot, Mrs. Cape, 1867. 22.

Arruda Furtado, F. d' Azores, 1881. 54.

Arundel, John T. Pacific Islands, 1882–99. 70.

Ascherson, Paul Friedrich August. Australia, 1871 (*Halophila*).

Ascherson, P. F. A., and G. Rohlfs. Lybian Desert, 1880. 122. *See also* ROHLFS and ASCHERSON.

Atherstone, William Guybon. Cape, 1848–60 (incl. Albany, 1–113; Somerset, 1–196; Lake Ngami, 1–47; Namaqua Land, 1–15; Diamond Fields, 208.)

Augustinowicz, Dr. Siberia, 800; Turkestan, 145; Daghestan, 206. 1877–80. 1151.

Austin, Coe F. Appalachian Mountains (Mosses), 1872. 450.

Austin, Mrs. R. M. California, 1876–78. 307.

Avebury, Rt. Hon. Baron. *See* LUBBOCK.

Ayres, Dr. Philip Barnard. Mauritius, 1853–64 (Herb. c. 3000).

Ayres, Thomas. Cape. 1876.

Babbage [B. H.?] West Australia, 1871. 16.

Babington, Charles Cardale. Britain.

Babington, Churchill. (Lichens).

Backhouse, James. Britain, 1841–63.

Backhouse, J. and **A. Cunningham.** Norfolk Island. 25 (ex herb. Brown).

Baenitz, Dr. Carl. Europe, 1896–99, 145 ; Samoa, 316.

Bagnall, James Eustace. Britain, 1887 (*Rosa*).

Baikie, William Balfour. Tropical Africa (Niger), 1855–65 ; c. 220.

Bailey, Frederick Manson. Queensland. c. 450.

Bailey, Liberty Hyde. North America. 1897.

Baines, Thomas. Africa, tropical, and South, 1854–61, 1864–72 ; c. 410. *See also* CHAPMAN and BAINES.

Baird, James. Buenos Ayres, 1829–30.

Baker, Carl F. *See* EARLE, F.S., S. M. TRACY, and C. F. B.

Baker, Edmund Gilbert. Britain, 1887.

Baker, G. Percival. Caucasus, 1891.

Baker, Miss H. Madagascar, 1872. 14 (Ferns).

Baker, John Gilbert. Europe, 1876–84.

Baker, Richard Thomas. New South Wales, 1897–99. 46.

Balansa, B. 1855–77. Asia Minor, 1032 ; Marocco, 34 ; Laristan, 404 ; Paraguay, 3072 ; Tonquin, 2653.

Baldacci, Antonio. Balkan States, Crete, etc., 1890–99. 1978.

Baldwin, Dr. Georgia, 1837.

Balfour, Isaac Bayley. 1875–94. Rodriguez, 371 ; Bourbon, 447 ; Aden, 47 ; Socotra, 694.

Balfour, John Hutton. Scotland, 1864.

Ball, Miss Anne E. Ireland, 1837–40.

Ball, John. 1867–87. Europe, Marocco, Orient, South America. (Herb.)

Bancroft, Dr. Edward Nathaniel. Jamaica, 1826–48.

Bancroft, Dr. Joseph. Australia, 1879. (Pituri plants).

Bang, Miguel. Bolivia, 1890–95 962, etc.

Banks, George. Britain, 1830.

Barber, Charles Alfred. West Indies, 1892. 96.

Barber, Leal Mitford. South Africa, 1896. 24.

Barber, Mrs. Mary E. [*née* BOWKER]. Cape, 1867–89. c. 214.

Barbey, William. Egypt, 1880. *See also* FAVRAT and BARBEY.

Barceló y Combis, Francisco. Balearic Islands, 1876.

Barclay, Archibald. Hudson's Bay, 1845.

Barclay, George W. 1842–79. Paraguay, Bolivia, Central America.

Barker, George. (Cultivated plants), 1843.

Barkly, Lady Anne Maria. Mauritius, Bourbon, Cape, 1867–78. 31.

Barkly, Sir Henry. 1825–77. Mauritius, Ins. Mascar., Cape, Japan, c. 195.

Barlee, Lieut.-Gov. Sir Frederick Palgrave. Honduras, 1878.

Barnéoud, Marius. Chili, 1849.

Barnston, George. 1868–74. British North America, California, Colorado.

Barnston, James. Canada, 1843.

Baron, Rev. Richard. 1880–96. Madagascar. 11,834.

Baroni, Eugenio. China, 1896. 11.

Barr, Capt. H. F. Bombay.

Barrington, Lieut., *R.N.* Japan, 1855.

Barry, Martin. Britain, 1831, etc.

Barter, Charles. Niger, 1857–59. n. 1–3444.

Bartling, Friedrich Gottlieb. 1837–65.

Batalin, Alexander (per). China and Central Asia, 1892–96 (incl. pl. from Potanin and Przevalski).

Batcock, John. Nilghiris, 1869.

Bateman, James. Cult. plants, 1837–65.

Bates, G. L. Cameroons, etc., 1895–96. 613.

Battcock, H. West Indies, Abyssinia, 1855.

Baudin, Capt. Australia, 1880. 647.

Bauermann, —. *See* LORD and BAUERMANN.

Baumann, —, and others. Tropical Africa, 1897. 471.

Baur, George. Galápagos, 1898. c. 60.

Baur, Rev. Leopold Richard. Cape, 1874–85. c. 1.00.

Baxter, William. Australia, New South Wales. 184.

Baxter, William (of Oxford). Britain (Cryptogams) 1887, ex herb., c. 100, Fungi.

Beadle, C. D. North Carolina, 1897 (ex Herb. Biltmore).

Beardsley, A. F. California, 1856–57.

Beazeley, M. China, 1884.

Bebb, Michael Shuck. North America, 1872–91. 328, chiefly *Salix*.

Beccari, Odoardo. Borneo, Sumatra, Indian Archipelago, Abyssinia, 1872–88. 3428.

Beck von Mannagetta, Guenther, Ritter. Bosnia and Herzegovina, cent. i.-iii., 1894–98. 300.

Beck, Lewis Caleb. North America, 1826.

Becker, Alexander. Caucasus, 1880. 640.

Beddome, Col. Richard Henry. India, 1865–98. 1190.

Beeby, William Haddon. Britain, 1878–91. 61.

Beechey, Capt. Sir Frederick William, R.N. *See* COLLIE and LAY.

Beevor, Dr. Hugh Reese. Aden, 1864. 36.

Bélanger, Charles J. India? 1863.

Belcher, Sir Edward. Arctic regions. 1847.

Bell, E. D. Malacca, 1883.

Bell, Major Frank. Persia, 1884. 120.

Bellew, H. W. Kashmir, Kashgar, 1875. 208.

Bennett, Alfred William. Europe, 1879–80. 12.

Bennett, Arthur. Britain, etc., 1880–90.

Bennett, Edward Turner. Britain, 1869.

Bennett, G. B. St. Helena, 1843.

Bennett, George. Australia, 1853, etc.

Bennett, John Joseph. 1864 [ex Herb. Brown].

Benson, Gen. Robson. 1863–73. Burma, S. India.

Bent, Joseph Theodore. 1895–97. Arabia, Soudan. 565, etc.

Bentham, George. Europe, 1824–71. (Herb.)

Berger, —. Greece, 1828?

Berggren, Sven. 1877–79. New Zealand. 206.

Berkeley, Major-Gen. Emeric Streatfeild. 1873–94. India. 15.

Berkeley, Rev. Miles Joseph. 1830–89. (Hb. Fungi, 10,900.)

Berlandier, Jean Luis. Mexico, 1845?

Berlin (Exchanges). 1863?–99.

Bernays, Lewis Adolphus. Queensland, 1875.

Bernouilli, Dr. G. Guatemala, 1868–72.

Bernouilli, Dr. G., and — Cario. Guatemala, 1885. 755.

Bertero, Charles. Juan Fernandez, 1830.

Bertoloni, Antonio. Italy, 1836–62 ?

Bescherelle, Emile. Réunion, Mauritius, Antarctic regions, 1880-87. 165.

Besel, Dr. —. Arctic plants, 1873.

Besser, Wilibald Swib. Joseph Theophilus. 1830. Europe. *See also* HOHENACKER.

Bevan, Robert. Mauritius, 1830.

Beverley, —. Melville Island, 1867. 70. *See also* TREVELYAN, W. C.

Bewsher, C. E. Cape, Mauritius, Mascarene Islands, 1877–88. 239.

Biasoletto, Bartolommeo. Dalmatia, 1831.

Bicheno, James Ebenezer. 1820. (*Juncus.*)

Bicknell, Clarence. Balearic Islands, 1899.

Bidwill, John Carne. Tahiti, New Zealand, 1846–48. n. 138.

Bigelow, John M. *See* PARRY, C. C., etc.

Bilimek, Dominik. Mexico, 1878. 210.

Biltmore Herb. *See* BEADLE, C. D.

Binnendyk, S. Java, Indian Archip., 1859–66. 110.

Bioletti, Frederick Theodore. California, 1895. 134.

Biondi, —. China, 1898. 50.

Bird, Isabella. *See* BISHOP, MRS.

Birdwood, Mrs. Evelyn. Aden, 1897. 127.

Birdwood, Sir George Christopher Molesworth. India, 1862–73. *Boswellia*, etc.

Birdwood, Lt.-Col. William Spiller. Aden, 1899. 54, and n. 128–181.

Birkbeck, Morris. 1899. Herb., 2 vols.

Bishop, Mrs. Isabella (*née* **Bird**). Luristan, 1891.

Bissett, James. Japan, 1877. 402.

Black, —. Trinidad, 1886. 145 (Mosses).

Black, Allan A. Bangalore, 1864.

Blackburn, Justice E. B. Mauritius, Madagascar, 1863. (Herb.)

Blagrave, Lt.-Col. Cape, 1882. 30.

Blackmore, T. Tangiers, Mogador, 1871–74. 27.

Blancaneaux, —. British Honduras, 1888. 14.

Blanchet, Jacques Samuel. Bahia, 1851–66. 690, etc.

Blandford, Mrs. New Zealand, 1866. c. 40.

Bleckenden, A. H. (Cult. plants) 1853–54.

Blenkworth, Robert. Kumaon, 1837.

Blomfield, Capt. Richard Massie. Japan, 1873. 41.

Bloomfield, Rev. E. L. Britain, 1884.

Blow, Thomas Bates. West Indies, 1898. (*Nitella.*)

Bloxam, Rev. Andrew. Britain, 1839–65. 212, etc.

Bloxam, A. R. (son of the foregoing). New Zealand, 1866. 87 (Lichens).

Blunt, Lady Anne. Arabia, 1880.

Blythe, J. Mauritius and Madagascar, 1855.

Blytt, Axel Gulbrand. Norway, 1893.

Bohler, John. Britain, 1873. (Lichens.)

Boissier, Pierre Edmond. Switzerland, Orient, 1839–74. 1700, etc.

Boivin, Louis Hyacinthe. India, Mascarene Islands, Cape, 1853–86. c. 800.

Bojer, Wenzel. Mauritius, 1826.

Bolander, Henry N. California, 1865. c. 230.

Bolle, Carl. Canaries, 1863.

Bolton, D. Cape, 1853–59.

Bolus, Harry. South Africa, 1868–99. c. 3500. *See also* MacOwan, P., and H. Bolus.

Bommer, Jean Edouard. Damaraland, 1890.

Bongard, Henri Gustavus. Mongolia, Turkestan, 1835 ?

Boog, W. Rio de Janeiro, 1823–24.

Booth, John. (Cult. plants) 1844, etc.

Boott, Francis. 1819–64. (Herb. *Carex.*)

Bornet, Edouard. Europe, 1877–91. 580 (Algae).

Bornmueller, Joseph. 1891–98. Asia Minor, Syria, Persia. c. 3046.

Bornmueller, J., and P. Sintenis. Turkey, 1892. 359.

Borrer, William. Europe, 1829–63. (Brit. Herb.)

Borszczow, Elias. Russia, 1863. 36.

Bory de St. Vincent, Jean Baptiste Marcellin. Algeria, etc., 1821-44, 1880.

Borzì, Antonio. Sicily, 1896.

Bosch, Roelof Benjamin van den. Java, 1860. (Mosses).

Boswell, Henry. 1890. 23 (exotic Mosses).

Boswell, John Thomas Irvine, formerly Syme and Boswell-Syme. Britain, 1852–62.

Botanical Exchange Club. Collections. Britain, 1887.

Botanical Record Club. Collections. Britain, 1881-83. 5537.

Botteri, Mateo. Dalmatia, Mexico, 1868-74→. n. 1–492?; 500–1194.

Bourdillon, Thomas Fulton. Travancore, 1890–96. 406, etc.

Boughton, Edw. G. British Guiana, 1848–56.

Bourgeau, Eugène. British North America, Spain, Balearic Islands, Canaries, Mexico, North Caledonia, 1846–74. 1789, etc.

Bourne, Frederick S. A. China, Formosa, 1882–97. 232.

Bourne, Gilbert Charles. Diego Garcia, 1885–86. 55.

Bouton, Louis. Mauritius, 1831–71.

Bower, Robert Lister. Tibet, 1893.

Bowie, James. Cape, 1842–69.

Bowker, James Henry. Cape, Natal, 1853–83. 390.

Bowman, David. Columbia, 1884. 28.

Bowman, John Eddowes. Britain, 1830–41.

Bowman, R. B. Britain, 1831.

Bowring, John C. Hongkong, 1852–56.

Bowring, Sir John. China, 1852–91.

Boxall, Richard. Burma, Shan States, 1890–91.

Brace, Lewis Jones Knight. Bahamas, 1878–80. 300.

Bradford, Dr. Edward. China, 1879–99 (Fern Herb.).

Braine, C. J. Chusan, 1849.

Braithwaite, Dr. Robert. Britain, 1875–81. 61 (Mosses).

Brand, William. Britain, 1832–36.

Brandegee, Mrs. Katherine, *née* **Curran.** California, 1895. 33.

Brandis, Sir Dietrich. India, 1872–99. 828.

Braun, Alexander Carl Heinrich. Europe, c. 450. (*Chara*, *Najas*.)

Braun, G. Europe, 1888. 185 (*Rubus*).

Brébisson, Alphonse de. France, 1886. 300 (Algae).

Bree, Rev. William Thomas. Britain, 1831–63.

Brehm, Joachim. Cape, 1849.

Brenton, Miss Mary E. Newfoundland, 1830–31, etc.

Bresadola, Giacomo. Europe, 1890. (Fungi).

Bretschneider, Dr. Emil. Pekin, 1880–82. 570.

Brewer, J. A. Australia, 1874. 60.

Brewer, William H. California, 1865–66.

Bridges, Thomas. Chili, 1829–58.

Briggs, Thomas. Varaguas, Costa Rica, 1829–45.

Briggs, Thomas Richard Archer. Europe, Britain, 1886–90. Herb. 1891.

Brigham, William T. *See* MANN, H., and W. T. BRIGHAM.

Briosi, Giovanni, and **F. Cavara.** Europe, 1889–97. 300 (I funghi parasiti, fasc. i.–xii.).

Brissot, Adam. 1834.

Britten, James. Britain, 1870. 54.

Britton, Mrs. Elizabeth G. North America, 1889–93. 53.

Britton, Nathaniel Lord. North America, Mexico, Paraguay, 1888–94. 223.

Broadway, Walter E. Grenada, 1894–95. 157.

Brocklehurst, Thomas. (Cult. plants) 1838–46.

Brodie, Walter. New Zealand, 1845.

Bromfield, Dr. William Arnold. Britain, Egypt, 1836–50. c. 160.

Brongniart, Adolphe Théodore. 1826–62.

Brooke, Sir James. Sarawak, 1853–55.

Brooks, J. T. Britain, 1842 ?

Broome, Christopher Edmund. Britain, 1844–49.

Broome, Mary Anne, Lady ; formerly **Lady Barker.** Australia, 1844. 44 (Algae).

Brotherston, Andrew. Britain, 1878.

Brotherus, Victor Ferdinand. Finland, Caucasus, etc., 1880–98. (Mosses, etc.)

Brown, Robert. Australia, 1859–79. 3015, etc. (ex Herb.)

Brown, Robert, of Campster. Greenland, 1867. 169.

Brown, William. Britain ? 1844.

Bruckmueller, —. Columbia, 1873. 25.

Bruegger, Chr. G. *See* HEER, O., and C. G. BRUEGGER.

Bryce, Rt. Hon. James. Western North America, South Africa, 1884, 1896. 123.

Buchanan, John. New Zealand, 1867–77. 13. *See also* HECTOR and J. BUCHANAN.

Buchanan, Rev. John. Natal, 1867–83. 1035. *See also* MCKEN and J. BUCHANAN.

Buchanan, John, C.M.G. Shiré, 1878–99. 2380.

Bucknall, C. Europe, 1874.

Buhse, Fedor. Orient, 1893. 73.

Bulger, Major George Ernest. Burma, 1873. 19.

Bulger, Lieut. Claude Osbert. Koomassie, 1875.

Bullock, Thomas Lowndes. Pekin, 1888–97. 444.

Bunbury, Sir Charles James Fox. Brazil, 1849; n. 1–400; Ferns, 1–9.

Bunbury, Miss. Australia, 1887–94. 94.

Bunbury, Mrs. D. A. Australia, 1886–92. 112.

Bunge, Alexander. Persia, etc., 1863–78. Incl. LEHMANN and BORSZCZOW, and 53 *Astragali*. *Salsola*, *see* COSSON, E. St. C.

Bunting, Isaac. Japan, 1883.

Burbidge, Frederick William. Borneo, Sulu, etc., 1878–97. 963.

Burchell, Dr. William John. 1819–47, 1865. Brazil, n. 11765, in about 52,000 specimens; Cape, n. 4856; St. Helena, 175, etc.

Burck, William. Indian Archipelago, 1887-88. 112, types.

Bureau, Edouard (per). 1892, misc. 1505; China, 1894–98. 31.

Burges, William. Australia, 1858. 200.

Burke, Francis. Montserrat, 1855.

Burke, Joseph. South Africa, North America, 1843–46. *See also* VEITCH, H. J., 1898.

Burkill, Isaac Henry. Britain, 1895.

Burle. Per J. T. MOGGRIDGE. 1875.

Burton, Sir Richard Francis. Dahomey, Arabia, etc., 1864–78. 322.

Burton, Sir R. F. and **Commander V. L. Cameron.** Gold Coast, 1882. 151.

Bush, B. F. Missouri, Indian Territory, 1895. 853.

Bushell, Dr. Stephen Wootten. Pekin, 1874–82. 231.

Butler, Rev. T. Corsica, 1886.

Butterworth, Col. Singapore, 1855.

Bynoe, Benjamin. Australia, 1843.

Calcutta. (Exchanges, etc.), 1863–84, etc.

Caldcleugh, Alexander. Chili, 1830– ?

Caldwell, Mrs. E. New Caledonia, 1871. 331.

Callery, —. Macao, Cochin China, Malaya, 1886. 237.

Callewaert (or **Cullewaert**), **C.** Stanley Pool, 1886. 14.

Calvert, Henry Hunter. Armenia, Egypt, 1854–76.

Calvert, H. H. and J. Zohrab. Armenia.

Cameron, Major Donald Roderick. North American Boundary Survey, 1876.

Cameron, "Mr." New Zealand, 1872.

Cameron, David. (Cult. plants), 1832.

Cameron, Commander Verney Lovett. Tanganyika. *See also* BURTON, Sir R. F., and V. L. C.

Cameron, James. Madagascar, 1833. (Ferns).

Cameron, John. Madagascar, 1874. 12 (Ferns).

Cameron, John. India, 1899. 20.

Cameron, Kenneth J. British Central Africa, 1896–99. c. 200.

Cammock, —? Nicaragua, 1867. (Ferns).

Campbell, Dr. Archibald. Darjeeling, 1856.

Campbell, E. J. F. British Honduras, 1898.

Campbell, Robert. Mackenzie River, 1851.

Campbell, William Hunter. British Guiana, 1871. 275.

Cantara, Dr. C. B. Montevideo, 1898.

Cantley, Nathaniel. Mauritius, Malaya, 1878–86. 305.

Cantor, Dr. Theodore Edward. Chusan ? 1851.

Capanema, G. S., Barao de. Brazil, 1861. (*Utricularia.*)

Carbonell, John. 1887 (ex Herb.). 276.

Carder, —. Liberia, 1877. 14.

Cardosa, Joao. Cape Verde Islands, 1895. 206.

Cardot, Jules. France, 1892. (Mosses).

Carey, John. 1868. (Herb., United States.)

Cario, —. *See* BERNOUILLI and CARIO.

Carles, William Richard. Corea, China, 1885–98. 830, etc.

Carlile, E. Australia, 1882.

Carlyle, Dr. Britain, 1889–90. 478 (Fungi, etc.).

Carmichael, Dugald. Britain, Tristan d'Acugna, 1821–25, etc.

Carnegie, Hon. David Wynford. West Australia, 1898.

Carpenter, Lieut. Alfred. Luchu, 1882. 15.

Carrington, Dr. Benjamin. Britain, 1859. (Hepaticae.) *See also* PEARSON, W. H., and B. CARRINGTON.

Carr, Lieut. Henry John. Rio Janeiro, 1869. 18.

Carroll, Isaac. Britain, Ireland, 1848, etc.

Carson, Dr. Australia, 1879.

Carson, A. Tanganyika, etc., 1891–95. 286, etc.

Cartwright, H. Demerara, 1853–55.

Cartwright, T. B. Samoa, New Zealand, 1889. 15.

Caruel, Teodoro. Italy, 1884. 697.

Caspary, Johann Xaver Robert. Prussia, 1849–85, 1892 (ex Herb.)

Castello de Paiva, Baron. *See* PAIVA, etc.

Cattell, Dr. William. Mauritius, Simla, Afghanistan, 1871–80.

Cavara, Dr. Fridiano. *See* BRIOSI and CAVARA.

Chamberlain, Rt. Hon. Joseph. 1893–96 (cult. Orchids).

Chamberlain, T. T. South Africa, 1879.

Champion, Major John George. Hong Kong, 1837–52.

Chandler, J. Montserrat, 1886.

Chapman, James. Damaraland, 1864.

Chapman, J., and Thomas Baines. Africa, south trop., 1864-65.

Chapman, H. S. New Zealand, 1841–45.

Chapman, Dr. W. 1838. ——?

Cheeseman, Thomas F. New Zealand, Kermadec, 1868–89. 675.

Charlesworth, J. Andes, 1889. 40.

Charlesworth, Shuttleworth & Co. Andes, 1891. 48 (Orchids).

Christ, Dr. Hermann. Teneriffe, Europe, Brazil, Costa Rica. 40.

Christie, A. E. Scotland, 1877.

Christie, Henry. Britain, 1841–60. (Cult. plants also.)

Christie, Henry (?) Mexico, 1871. 151.

Christie, W. D. Panama, Argentine, 1853–59.

Christy, Robert Miller. Britain, 1883.

Christy, Thomas (per). Liberia, 1878.

Christy, William. Britain, 1848–57.

Churchill, George Cheetham. Europe, 1884–97. 248.

Claes, F. Columbia, 1896.

Claraz, Georges. North Patagonia, 1883.

Clark, Mr. West Tropical Africa, 1865.

Clarke, Charles Baron. Indian Herb., 1870–97, about 4,000

Clarke, Joshua. Britain, 1865.

Clarkson, B. D. Australia, 1863.

Cleghorn, Dr. Hugh Francis Clarke. Madras, 1854–57.

Cleve, Peter Theodor. 1883. (Arctic Diatoms.)

Clifton, George. Australia, 1857–62.

Clowes, Rev. John. 1841–46. (Orchids.)

Cochrane-Baillie, Charles Wallace Alexander Napier, 2nd Baron **Lamington.** Shan States, 1895. 25.

Cockerell, Theodore D. A. Colorado, Jamaica, etc., 1891–93. 714.

Cocks, Charles S. Crimea, 1855–56.

Cocks, John. 1843–55. (Algae.)

Coimbra Garden. 1878–79. 509.

Cole, Miss Edith. Somali Land, 1895. 340.

Cole, Rev. J. A. Sierra Leone, 1896.

Colenso, Rt. Rev. John William, Bishop of Natal. Natal, 1857.

Colenso, Rev. William. New Zealand, 1840–94. 5115.

Collett, Colonel Sir Henry. 1879–99. Simla, 3; Afghanistan, 161; Burma, Java, etc., 746; Canaries, 46; Algeria, 21; Spain and Corsica, 13.

Collie, Alexander. 1826–48. "Blossom" and "Sulphur" collections.

Collingwood, Dr. Cuthbert. Pratas Island, 1867.

Collins, I. India, 1881. 19.

Collins, W. Natal, 1856.

Colonial Museum, New Zealand. *See* NEW ZEALAND.

Colvill, William Henry. Bagdad, 1873. 109.

Combs, R. 1897. Cuba, 677; Iowa, 100 (fasc. i.)

Comins, Rev. Richard Blundell. Norfolk and Solomon Islands, 1882–99. 354.

Commerson, Philibert. Madagascar (ex Herb. Brown).

Conway, Sir William Martin. Karakoram, 1893, 353; Bolivia, 1899. 65.

Cooke, Mordecai Cubitt (per). Europe, North America, etc. (Fungi) 1872–86; c. 1550, and Herb. Mycol.

Cooke, Dr. Theodore. Bombay, 1893–99. 43.

Cooley, Miss Grace. Alaska, 1892. 182.

Cooper, Sir Daniel, Bart. Australia, 1864.

Cooper, J. J. Costa Rica, 1886. 300 (Ferns).

Cooper, Thomas. Cape, 1863–85. c. 3075.

Cooper, Consul William Marsh. China, 1884–86. 58.

Copeland, Ralph. Trinidad, 1884.

Copenhagen Museum (per). Mexico, Greenland, 1870-86. 553.

Coppinger, Dr. Richard William. 1879–82. Tahiti, 26; Chili, 46; Patagonia, 159; Australia, 90; Seychelles, 88.

Cordemoy, Hubert Jacob de. Bourbon, 1875–97. 88.

Cordukes, S. Natal, 1878. 12.

Corning, Erastus. (Cult. Orchids, Reichenbach's types), 1890.

Corrie, Alfred. Fiji, 1874. 12.

Cosson, Ernest Saint-Charles. 1857–90. Algeria, 33; Marocco, 1553; Marocco and Algiers, 1104; Tunis, 682. (Incl. 100 of Bunge's types of *Salsola*).

Coulter, Thomas. California, Mexico.

Coville, Frederick Vernon. Death Valley, California, Arizona, Mexico, 1894–98. 35.

Coville, F. V., and F. Funston. Death Valley, 1894. 143.

Cox, Miss. Tasmania, 1864. 63.

Craig-Christie, Alexander. Britain, 1877-92.

Cranwell, W. B. Monte Video, 1882. 50.

Creagh, Charles Vandeleur. British North Borneo, 1895–96, 1114; and 2nd coll.

Crépin, François (per). Belgium, 1877–99, —; **Mycotheca** belgica, fasc. i.–viii., 383; Congo region, 18.

Croall, Alexander. Britain, 1844–62.

Croker, Mrs. F. Europe, 1880.

Crombie, Rev. James Mascall. Britain, 1874–77. (Lichens) cent. i.–ii. + 123.

Crosby, C. S. Vavau, 1894.

Cross, Robert. Chimborazo, Loxa, 1882–84. 100.

Crowther, William. Gold Coast, 1892.

Cruckshanks, Alexander. South America, 1825–28. Europe, 1831–56.

Crueger, Hermann. Trinidad, Venezuela, 1849–59. c. 140.

Cruttenden, Charles J. Somali Land, 1853.

Cullewaert (or **Callewaert**), **Charles.** Congo, 1886. 14.

Cuming, Hugh. 1841, etc. (ex Herb. Benth.), Malacca, Singapore, Phillipines, St. Helena, n. 401–2464.

Cummins, Surg.-Capt. Henry Alfred. 1894–96. India, 15; Sikkim, 38; Ashanti, 379.

Cunningham, Allan. Australia, New Zealand, 1828–36, 1891.

Cunningham, J. F. British Central Africa, 1899. 25.

Cunningham, Richard. Australia, 1823–35.

Cunningham, Robert Oliver. Magellan, etc., 1869. 611, etc.

Curdie, Daniel. Australia, 1851.

Curnow, William. Britain, 1841, etc.

Currey, Frederick. Britain, etc., 1856–81. (Mycol. Herb., 1881.)

Curror, Dr. A. B. Angola, 1843–44.

Curtis, Charles. Timor, Java, Samatra, Borneo, Penang, Perak, 1881–99. 2535; *see also* VEITCH, 1898.

Curtis, Rev. Moses Ashley. North America, 1836-38.

Curtiss, A. H. North America, 1878–97. 3002.

Cusack, W. H. West Australia, 1897.

Cusick, W. C. Eastern Oregon, 1898. 199.

Cuthill, W. Canton, 1874.

Czekanowski, —. Arctic Siberia, 1885. 202.

Czermak, —. 1899. *See* **Reineck & Co.**

Dahlstedt, Hugo. Europe, Scandinavia (*Hieracium*), cent. i.–xi. 1100.

Daintree, Richard. Queensland, 1873. 251.

Dalhousie, Lady C. 1826–47. *See* RAMSAY.

Dall, —. Aleutian Islands, 1874.

Dalzell, Nichol Alexander. India, 1847–63. 273, and Herb. 1297.

Dammann & Co. Naples, 1893–94. Abyssinia (and cult.). 14.

Danford, Mrs. A. E. Cilician Taurus, 1876–79. 38.

Danger, W. J. King George's Sound, 1865. 200.

Daniel, —. Australia, Fiji, 1868. 198.

Daniell, Dr. William Freeman. West Africa, 1856.

Darbishire, Otto Vernon. 1896. (Algae).

Darby, S. Australia, 1893.

Darwel, Rev. L. Europe, 1876.

Darwin, Charles Robert. Fernando Noronha, Galápagos, etc., 1833–39.

Davenport, A. China, 1879.

Davenport, George E. North America (Ferns); Mexico, Unalashka, 1878–97. 75.

David, Abbé Armand. Tibet, China, 1873–89. 363.

Davies, Miss G. Europe, 1880.

Davies, George. Europe, 1874. (Lichens).

Davidson, Colonel Alfred Augustus. Kumaon, Gurwhal, 1878. 41.

Davis, —. (per VEITCH.) South America, 1884. c. 106.

Davy, Joseph Burtt. California, 1895–98. 285.

Dawson, George Mercer. North American Boundary Commission, 1875–77. 819.

Dawodu, T. B. Lagos, 1899. 44.

Deakin, Dr. Richard. Britain (Lichens), 1836.

Deasy, Capt. Henry Hugh Peter. Tibet, 1897.

Decaisne, Joseph. [1835–63?] 1869. (Peppers). 34.

Decaisne, J. & J. E. Planchon (per). Columbia, 1869. 46.

De Crespigny, Eyre Champion. 1889–91. India, South Africa, Britain, 34.

Delavay, Abbé, —. Yunnan, 1886–93. 520, etc.

Delessert, Baron Benjamin. 1824–49. ——?

Delisle, —. Réunion, Seychelles, 1878. 210.

Denham, Adm. Sir Henry Mangles. Percy Islands, 1870. 15.

Denison, Sir William. 1846–62 (Orchids).

Dennes, George Edgar. Britain, 1847 ?

Dent, Christopher. Britain, 1841.

Denton, George Chardin. Lagos, 1895.

Deplanche, —, and **C. Vieillard.** New Caledonia, 1865. 220.

Deppe, Friedrich. Mexico ; *see* SCHIEDE, C. J. W. and F. D.

Derry, R. Malacca, 1889. 101.

De Toni, Giovanni Battista, and **David Levi-Morenos.** Italy (Algae), 1886–89. Phycotheca italiana, n. 150.

Desmazières, Jean Baptiste Henri Joseph. France (Cryptogams) 1880. 2000.

De Vriese, Willem Hendrik. Java.

De Vriese, W. H. & P. Harting. (Marattiaceae.)

Dewar, A. Britain, 1834–36.

Dickie, George. Britain, 1837–68.

Dickins, Frederick Victor. Japan, Hong Kong, 1864–81. 769.

Dieck, Dr. G. North America, 1898. 70.

Dieffenbach, Ernst. New Zealand, 1842–44.

Diell, Rev. J. Tahiti, 1837.

Dietrich, Amalia. Brisbane, 1863–66. 30.

Dill, Dr. —. Hong Kong (before 1861 ; Ferns).

Dillon, Dr. R. Q. *See* QUARTIN DILLON, R.

Distin, H. Jamaica, 1830–40.

Divers, W. H. Florida, 1891.

Dobson, Sir William Lambert. Tasmania, 1883.

Dod. *See* WOLLEY-DOD.

Dodgson, Col. David Scott. Khasia, Sikkim, 1876. 35.

Doerfler, Ignaz (per). 1890–97. Tirol, etc., 207 ; Crimea, 328.

Dombey, Joseph. Peru, 1864, "a few."

Donaldson, Sir Stuart. Australia, 1862.

Douglas, David. California, 1825–34.

Dovat (or **Dorat**), **Dr.** Sonsonate, 1864.

Downton, —. (Per VEITCH). Juan Fernandez; Patagonia, 1884. c. 93.

Drège, C. F. Cape?

Drège, Jean François. Cape, 1876.

Dresser, Christopher. Britain, 1860.

Driffield, —. Australia, 1872. "Lot 289."

Druce, Herbert. 1898. (Cult. Orchids).

Drummond, James. Australia, 1842-60.

Drummond, Thomas. North America, 1829–35, 1874.

Drummond Hay. *See* HAY.

Dufour, Léon. Pyrenees, 1829.

Dulau & Co. (per). Flora polonica, cent. vi., vii. 200. *See* WOLOSZCZAK.

Dumbleton, W. D. Cape, 1870.

Duncan, James. Mauritius, Rodriguez, 1847–62.

Duncan, James W. (son of the above). Mauritius.

Dundas, Henry, Capt., R.N. Mexico, 1832.

Du Petit Thouars, Louis Marie Aubert. Madagascar.

Dupray, Félix. *See* ROUMEGUÈRE, C. and F. DUPRAY.

Durand, Théophile (per). Costa Rica, 1891.

D'Urban, William Stewart Mitchell. Natal, 1861–64. (Ferns).

Durieu de Maisonneuve, Michel Charles. Spain, 1835.

Dusén, Per. Cameroons, 1893, 274; Patagonia, 1899.

Dusén, P., and R. Kidston. Europe, 1896.

Duthie, John Firminger. 1874–99. Britain, Europe, 208; India (Kashmir), 7281.

Dutton, Charles. Australia, 1852.

Duval-Jouve, Joseph. France, etc., 1871. 40.

Dyer, Sir William Turner Thiselton-. Europe, 1870–84, 692. (Herb.).

Eagle, Francis King. Britain, 1831–46.

Earle, F. S., S. M. Tracy, and **Carl F. Baker.** South West Colorado, 1899. 670.

Easmon, Dr. John Farrell. Gold Coast, 1889.

East, Capt. James Wylie. Crozets, 1880.

Eastwood, Miss Alice. California, 1897.

Eaton, Rev. Alfred Edwin. Britain, Spitzbergen, Magellan, Cape, Kerguelen, 1868–76.

Eaton, Major (U.S.A.), and **Dr. — Edwards.** Mexico.

Eaton, Daniel Cady. North America, Sandwich Islands, Bermuda (chiefly Ferns). 1855–81. *See also* FARLOW, W. G., ANDERSON, and D. C. E.

Ecklon, Christian Friedrich, and **Carl Ludwig Philipp Zeyher.** Cape, 1834. (7–8000 in the Enumeratio, but many in single specimens).

Eclipse Expedition. 1872. Lord Howe Island. 64.

Edgerly, John. New Zealand, 1842.

Edgeworth, Michael Pakenham. India, etc., 1841–83 ; Herb.

Edmonston, Thomas Biot. Shetland, Falkland Islands. 1837–45.

Edwards, Dr. (U.S.A.). *See* EATON and EDWARDS.

Edwards, William. Britain, 1839–41.

Egerton, Mrs. Robert. Beluchistan, 1890.

Eggers, Baron Heinrich Franz Alexander. 1881–97. Bahamas, 360 ; Cuba, 578 ; West Indies (excl. Cuba) 2113 ; Ecuador, 587.

Ehrenberg, Carl. Mexico.

Ehrenberg, Christian Gottfried. Orient, 1864.

Eights, Dr. —. New South Shetland, Patagonia, Chili, 1835–38.

Ekstam, Otto. Novaia Zemlaia. 1896. 77.

Ellacombe, Rev. Canon Henry Nicholson. Europe, 1876.

Elliot, George Francis Scott. 1888–95. Cape, 143 ; Madagascar, 1094 ; Egypt, 97 ; West Africa, 3251 ; Ruwenzori, 2849.

Elliott, E. A. Baluchistan, 1895.

Elliott, Rev. W. A. Matabeleland, 1886–72.

Elliott, William Robert. West Indies, 1887–88. 107. *See also* MURRAY and ELLIOTT.

Ellis, Job Bicknall. North America (Fungi), 1882–85 ; cent. i–xi., 1100.

Ellis, J. B. and **B. M. Everhart.** North America (Fungi), 1886–95 ; cent. xii–xxxiii. 2200.

Ellis, Robert. North West Himalaya, 1879–83. 762.

Ellis, Rev. William. Madagascar, 1855–62.

Elmer, A. D. E. Washington Territory, 1899. 440.

Elsey, J. R. North Australia, 1853–59.

Elwes, Henry John. 1871. Sikkim. 125.

Engler, Adolf (per). 1884–98.

Endres, E. Costa Rica, 1875–84. 541.

Endress, —. Pyrenees, 1831.

Engelmann, George. North America, 1843–68.

Enys, J. D. New Zealand, 1877–89. 17.

Ernst, Gustav Adolf. Venezuela, Columbia, 1870–82. 36.

Ervendberg, L. C. Mexico.

Evans, Maurice S. Natal, Zululand, 1894–98. 150.

Everett, A. H. Celebes, 1895. 92.

Everett, Lt.-Col. William. Kurdistan, 1885.

Everhard, C. W. China, 1878–79. 86.

Everhart, Benjamin Matlock. *See* ELLIS and EVERHART.

Eyre, Lt.-Col. John. Hongkong, 1850.

Faber, Rev. Ernst. China, 1887–91. 953.

Faber, Rev. E., and others. China, 1889. 101.

Fair, Dr. —. Uruquay, 1890. 100 (Grasses).

Fairholme, R. Tropical Africa, 1844.

Falconer, Hugh. India, 1837–63.

Falconer, H. and others. India, 1865.

Farlow, William Gilson. North America, Bermuda, 1881–99. 270.

Farlow, W. G., — Anderson, and **D. C. Eaton.** North America. (Algae), 1877–79. 130.

Farmer, John Bretland. Perim, 1895.

Faurie, Rev. Père. Japan, 1892–99. 5500.

Favrat, Louis, and **William Barbey.** Switzerland, 1880. c. 3300.

Fawcett, William. Jamaica, 1888–98. 418.

Fedtschenko, Boris. Turkestan, 1899. 40.

Feilden, Capt. Henry Wemyss. 1882–98. Cape (Lichens); Novaia Zemlaia, Kolguev. 503.

Felippone, Dr. F. Montevideo, 1889. 72.

Fellmann, N. I. Lapland, 1865. 370.

Fendler, Augustin. 1851–91. Chagres (ex Herb. Benth.), Trinidad, 1005; Venezuela, n. 1-2620; Ferns, n. 1–334; 145 Mosses.

Ferguson, Daniel. Ireland, 1838.

Ferguson, William. Ceylon, 1850–88. 791 (Algae).

Ferreira, Dr. Alexander Rodrigues. Brazil, 1874.

Field, Barron. Spain, 1835.

Field, H. C. New Zealand, 1877.

Fielding, Henry Barron. 1834–51. (ex Herb.).

Figari, Antonio. Nileland, 1886. 472.

Filhol, —. Campbell Island, 1878. 35.

Finlay, Dr. Kirkman. West Indies, 1873-77. 128 (chiefly Grasses).

Finck, Dr. Hugo. Mexico, 1865–94. 1464.

Firmin, Miss L. H. Falkland Islands, 1895–96. 44, etc.

Fischer, Friedrich Ernst Ludwig. Russia, 1824–53.

Fischer, S. Arabia (ex Herb. Bentham), n. 1–208.

Fisher, H. Britain, Franz Josef Land, 1890–97.

Fisher, S. H. Europe, 1876.

Fitt, George. Britain, 1844. (Mosses.)

Fitzalan, Eugène. Mount Eliot, 1864.

Flahault, Charles. Norway, Lapland, France, 1880-91. 138.

Flanagan, H. G. Kei River, 1898.

Fletcher, James. British North America, 1881-85. 27.

Florence, Herbarium. Italy, 1878, 181 ; (cult.) 1890, 5.

Floyer, Ernest Ayscough. Persian Gulf, Egypt, 1876–89. 36.

Floyer, Mrs. E. A. Buenos Ayres, 1894. 79.

Focke, Dr. Wilhelm Olbers. Germany (*Rubus*), 1887. 16.

Foggett, William. Britain, 1890.

Foot, Frederick T. Ireland, 1860. (Ferns.)

Forbes, Edward. Lycia, 1843. n. 1–720.

Forbes, Francis Blackwell. China, 1884–87. 153.

Forbes, Henry Ogg. Java, Indian Archipelago, North Guinea, Formosa, 1881–87. 489.

Forbes, James. 1830–42. (Cult.)

Forbes, Dr. John, of Chichester. Mexico, 1837.

Forbes, John, A. L. S. Cape de Verde Islands, 1844 ?

Forbes, W. A. Brazil, 1880.

Ford, Charles. China, Hongkong, Formosa, 1875–99. 1807.

Forster, Edward. Britain (ex Herb.) c 1300.

Forsyth Major, Charles Immanuel. Oriental Greek Archipelago, 1888, 346 ; Madagascar, 1896. 574.

Fortune, Robert. China, Japan, 1843–50 ; 1872 (1846, n. 1–182, A. 1—A. 327, ex Herb. Bentham).

Foslie, M. Norway, 1899. (Calcareous Algae.)

Foulkes, Rev. Thomas. India (Nilghiris), 1855–60.

Fox, Dr. —. Madagascar, 1885. 50 (Orchids).

Fox, Miss. *See* HAYNE, FOX, and POST.

Fox, "Mr." Brazil, 1857 ? n. 1–420.

Fox Strangways. *See* STRANGWAYS, W. T. H. F., 4th Earl of Ilchester.

France : Société Dauphinoise pour l'échange des plantes, 1878–8[illegible] 1492.

Franch[illegible]i, Dr. F. Guadelupe Island, California, and California, 1893–95. 75.

Franchet, Adrien René (per). Japan, 1876–91. 32.

Francis, George. Britain, 1835–64.

Franqueville, Count Albert de. Abyssinia (Legum.), 1863–65.

Fraser, Charles. Australia, 1824–31.

Fraser, Dr. John. Britain, Sweden, 1875–85.

Fraser, Dr. M. Borneo, 1885. 293.

Fraser, Patrick Neill. Canaries, 1890. 20.

Frere, Sir Henry Bartle Edward. Zanzibar, 1873. 26.

Frere, W. E. Bombay, 1858.

Freeman, A. Upper Nile, 1877. 99.

Freeman, Edward P. Bosnia, 1873. 100.

Freeman, E. P., and — Lucas. Upper Nile, 1877–99.

Friderichsen, K., and Otto Gelert. Denmark (*Rubus*), 1887–89 ; fasc. i.–iii.

Fries, Elias Magnus. Scandinavia, 1847–65.

Fries, Thore Magnus. Greenland, Scandinavia, 1872. 201.

Fritsch, K. Zambesiland, 1897.

Fritzsch, Baron von. *See* REIN and Baron V. FRITZSCH.

Fryer, Alfred. Britain, 1891. 36 (*Potamogeton*).

Fuckel, Leopold. 1884, etc. (Fungi) 2700.

Fullagar, —. Lord Howe Island, 1874. 91.

Funck, Nicholas. Mexico, 1840.

Funston, Frederick. Alaska, 1896. 109. *See also* COVILLE, F. V., and F. F.

Furtado. *See* ARRUDA FURTADO, J. d'.

Gadeceau, Emile. France, 1895. 14.

Gaillardot, Charles. Syria, 1862.

Gairdner, Meredith. North-west America, 1833.

Galeotti, Henri. Mexico, 1840–46.

Galpin, Ernest Edward. Transvaal, 1889–98. 1337, etc.

Gamble, James Sykes. India, Tibet, 1884–96. 382.

Gandoger, Michel. Europe, 1879–96 (*Rosa*), 411; Spain, 926.

Garber, Dr. A. P. Porto Rico, 1880. 142.

Garden, Capt. Robert Jones. Cape, 1854; Asia Minor, 1857.

Gardiner, William. Scotland (Muscineae), 1843. 500.

Gardner, George. 1836–47; Brazil, n. 1–6110; Ceylon, n. 1–1224.

Garovaglio, Santo. 1836–39 ? (Mosses).

Garrett, G. H. Sierra Leone, 1889. 178.

Gasparrini, Guilielmo. 1836. (Mosses).

Gattinger, Dr. A. Texas, 1882.

Gaudichaud-Beaupré, Charles. Macao, Cochin China, Malaya, 1886. 237.

Gaumer, G. F. Yucatan, Honduras, 1885. 544.

Gautier, Gaston. 1899; France and Spain, "Hieraciotheca," fasc. i.–v. and 334.

Gay, Claude. Chili, 1864; New Caledonia, 660.

Gay, Jacques. 1824–56, 1868 (Herb.), 15,435 sheets; Europe, 2973; India, 745; New Caledonia, 487; North America, 569; West Indies, Mexico, Central America, 1422.

Geheeb, Adalbert. 1872–81; Europe, 800; (Musci) 326.

Gelert, Otto. *See* FRIDERICHSEN and O. G.

Gennadius, O. Greece and Cyprus, 1898. 35.

Germain, Philippe. Chili, 1856–57. 508.

Gerrard, William Tyrer. South Africa, Madagascar, 1865–72. 3151.

Geyer, Charles A. North America, 1845–46. n. 1–675 (Herb. Bentham).

Ghiesbreght, August. Mexico, 1868–73.

Gibert, Ernest. Monte Video, 1858–82, 1492 (Parana, n. 1–100 ; Paraguay, Trees and Shrubs, 1–84 ; Monte Video, 1858, 1-196 ; 1–71 ; 1–114 ; Assumption, 1–84).

Gibb, Col. James Shaw. India, 1874.

Gibson, — (per VEITCH). India, 1882. 18.

Gibson, Alexander. India, 1841–60.

Gibson, George Stacey. Britain, 1844–48.

Gibson, Robert J. Harvey. 1893. Britain.

Giesecke, Charles Lewis. Greenland (*Fuci*), 1817.

Giffard, Consul J. Vera Cruz, 1841.

Gilbert, —. Western Australia, 1872. "Lot 312."

Gilbert, —, and — Sharpe. Australia, 1872. "Lot 328."

Giles, Dr. George Michael James. Gilgit, 1886. 1200.

Gilg, Ernst (per). Brazil, 1897.

Gill, Dr. — Cape, 1826.

Gill, Rev. W. Wyatt. Pacific Islands, 1872–82. 48.

Gillies, John. Chili, 1823–34.

Gilpin, Miss Helen. Madagascar, 1877-79. 74 (Ferns).

Giraldi, Padre, and others, ex Herb. BIONDI. China, 1898-99. 389.

Gissing, Thomas Waller. Britain, 1865.

Glasgow, Charles Ponsonby. Singapore, 1898. (Fungi). *See also* ROBERTSON-GLASGOW, C. P.

Glasgow, C. P., and Henry Nicholas Ridley. Singapore, 1898. 227.

Glaziou, A. Brazil, 1868–94. 22,799.

Glendinning, Robert. 1844–57. (Cult. plants.)

Glocken, — (per REICHENBACH). Bahia, 1865.

Glover, Sergt. Persia, 1872–73. 65.

Glover, Thomas. Britain (and Cult. Plants), 1834-65.

Goadby, B. T. Western Australia, 1898–99. 144.

Godefroy-Lebeuf, A. 1876–78. Cambodia, 709 ; Siam ; Portugal, 300.

Godman, Frederick DuCane. Azores, 1866. 490. *See also* SALVIN and GODMAN.

Godwin-Austin, Lt.-Col. Henry Haversham. Khasia, 1896. 14 sheets of Ferns.

Goebel, Dr. Carl Eduard. Venezuela, British Guiana, 1893.

Goeze, Edmond. Portugal, 1870–75. 54.

Goldie, Rev. H. Old Calabar, 1888.

Goltan, W. India, 1898.

Gomes, Dr. Europe, 1875.

Gomm, Elizabeth, Lady. India, 1856.

Goode, George Brown (per J. N. ROSE). Mexico, etc., 1896.

Goodenough, Rt. Rev. Samuel, Bishop of Carlisle. 1880 (Herb. 1900 kept).

Goodrich, L. C. Arabia, 1883. (Ferns.)

Gordon, Alexander. North America, 1845.

Gordon, Sir Arthur. Fiji, 1877.

Gordon, George. 1878. 132 (Coniferae).

Gordon, Henry J. Ascension, 1889. 154.

Gorman, Martin W. Alaska, 1896. 184.

Gosse. *See* SCHOMBURGK, Sir RICHARD. 1874.

Gosse, P. Andes, Aconcagua, 1899. 56.

Gottsche, Carl Moritz. *See* RABENHORST, L., and C. M. G.

Gouan, Antoine. France, etc. Herb. (cf. A. De Candolle, Phytographie, p. 414.)

Gouin, Dr. Vera Cruz.

Gourlie, William. Scotland, 1842.

Gower, William Hugh. 1895.

Grabowski, Henri Emanuel. Europe ? 1842.

Graeffe, Dr. Fiji, Polynesia, 1880. 289.

Graham, G. J. Mexico (Benth. Pl. Hartw., pref. p. iv.).

Graham, Maria. Brazil, 1824–25.

Graham, Dr. Robert. 1831–45.

Grant, —. Franz Josef Land, 1880. 12.

Grant, Abdul Kerim. Morocco, 1887–88. 1319.

Grant, J. W. India, 1846–48.

Grant, Col. James Augustus. Tropical Africa, 1860.

Gray, Asa (per). North America, etc., 1835–88. Upwards of 3247.

Gray, John. West Indies, 1887. 64.

Green, Rev. W. S. New Zealand, 1882.

Greene, Benjamin D. Bermuda, Cuba, 1831–32.

Greene, Edward Lee. California, North Mexico, Arizona, 1880–95. 850.

Gregg, Dr. Josiah. Mexico.

Gregory, H. K. Pernambuco, 1882. 18.

Gregory, Consul William. Formosa, 1867.

Greville, Dr. Robert Kaye. Scotland, 1825–56.

Grey, Adm. Hon. George. Cape, 1850–63.

Griffith, T. R. Seychelles. 1890–93.

Griffith, William. India, 1843–45 (n. 1–648, ex Herb. H. E. Ind. Co.; Khasya, n. 1–492, ex Herb. Bentham).

Griffith, W. and — Helfer. India, 1863.

Griffiths, Mrs. Amelia W. Britain (Algae), 1830–55.

Grisebach, Heinrich Rudolf August. Rumelia, Hungary. 1835–63.

Grosse, H. Paraguay, 1898. 17.

Groves, Henry (of Clapham) and **James Groves.** Britain, 1876. 59, incl. Fasc. i. of Characeae.

Groves, Henry (of Florence). Italy, 1877–86. 935.

Groves, James. Britain, 1890.

Guadagna, M. (ex Herb. per I. H. Burkill). Naples, 1899.

Guerke, Maximilian (per). West Indies, 1894. 357.

Guilding, Rev. Lansdown. St. Vincent, 1823–31; 1899, 2 vols., of drawings.

Guilianetti, A. New Guinea, 1897–98. 2 collections.

Guillemin, J. Antoine. 1832–39; 1892.

Guise, Sir W. V. Europe, 1875.

Gunn, Ronald Campbell. Tasmania, New Zealand, 1832–70, n. 1–1259, etc.

Guppy, Henry Brougham. Solomon Islands, Keeling Island, Java, 1885–89. 400.

Gurney, Miss. Tropical Africa, 1855.

Gussone, Giovanni. Italy, 1834–36; 1863.

Gwynne-Vaughan, David Thomas, North Brazil, 1898. 77.

Gwyther, C. J. Queensland, 1899.

Haage & Schmidt, Messrs. (per). Mexico, 1864–87, etc. 67.

Haast, Sir Julius von. New Zealand, 1861–85. 474.

Habel, Dr. Galápagos, 1870. 28.

Hackel, Eduard. Europe, 1885–87 (*Festuca*), 97 ; (*Andropogon*) 35.

Hahn, Ludwig. Martinica, 1868–78. 1896.

Hall, Col. Pichincha, 1837.

Hall, Elihu. Oregon, Virginia, 1872. 812.

Hall, E., and others. Oregon, 1872. 22.

Halle, Hughes Fraser. Europe, 1850–52.

Hallett, R. W. Singapore, Borneo, 1885. 280.

Halstead, Dr. M. B. Panama, 1850.

Hamilton, A. Macquarie Island, 1897. "Set."

Hamilton, Francis, formerly **Buchanan.** India. 1829?

Hamilton, William. Europe, 1829–38. (Med. plants.)

Hampe, Ernst. 1846. (Mosses.)

Hanbury, Daniel. 1848-73 ; ex Herb., 1877. 82.

Hanbury, D. and **Daniel Oliver.** Isère, Dauphiné, 1864. 180.

Hanbury, Thomas. Canaries (and cult. pl.), 1892–99. 24.

Hance, Henry Fletcher. China, 1848–88. 614.

Hancock, William. 1885–98 ; China and Formosa, 1327 ; Japan, 60 ; Sumatra, 90 ; Java, 91 ; Jamaica, 22 ; Guatemala, 25 ; Mexico, 35.

Hann, William. Australia. 1873. 251.

Hanna, Major Henry Bathurst. 1860?

Hannington, Rt. Rev. James, Bishop of East Equatorial Africa. 1883–86. 236.

Hanwell, T. New Zealand, 1874. 16 (Ferns).

Hardwick, Thomas. 1828–29.

Hariot, Paul. Tropical South America, 1884. 12.

Harland, Dr. William Aurelius. Hong Kong. 1856–59.

Harman, F. E. Sante Fé ; Uruguay, 1884. 57.

Harris, Dr. China, 1880.

Harris, William. Jamaica, 1887-96. 324.

Harrison, P. G. Costa Rica, 1884. 14 (Ferns).

Hart, Henry Chichester. Palestine, 1884. 1310.

Hart, John Hinckly. Jamaica, Trinidad, etc., 1886–99. 845.

Hart, Sir Robert. China, 1892.

Hart, Dr. W. H. Sierra Leone, 1882. 57.

Harting, P. See DE VRIESE, W. H., and P. H.

Hartman, Carl. Scandinavia (Mosses), 1880. 450.

Hartmann, C. H. Queensland, New Guinea, 1881–88. 83.

Hartweg, Theodor. Mexico, Columbia, Ecuador, 1845–48.

Harvard Arboretum. 1882. 96.

Harvard University, per A. GRAY. 1870. Plants of Wilkes's Expedition, 70; North American Lichens, 219.

Harvey, William Henry. Ireland, Cape, 1831–73.

Hassall, Arthur Hill. Britain (Algae), 1842–44.

Hasselt, W. Jan Conrad Adrian van. 1855.

Hasskarl, Justus Carl. Indian Archipelago, 1825–68.

Hassler, Dr. Ferdinand A. Paraguay, 1897. 1351, etc.

Hauck, Ferdinand, and P. Richter. "Phycotheca universalis" cent. i–xv. 1500.

Haughton, Capt. —. St. Helena, 1863–64. 100.

Haussknecht, H. Carl. 1870–89. Greece, 1411 sheets; Mesopotamia, 2580; Sundry, 159.

Haviland, Dr. George Darby. Borneo, 1890–96. n. 3600 (Kinabalu, n. 1055–1505).

Hawker, Hon. George C. Australia (Algae), 1886.

Haworth, Adrian Hardy. 1834.

Hay, Miss Drummond. Tangier, Morocco, 1853.

Hay, J. H. Drummond. Algiers, Morocco, 1878.

Haydon, Walter. Hudson's Bay, 1880–84. 248.

Haygarth, —. South Africa, 1890. 84.

Hayes, Sutton. Panama, 1898.

Hayne, W. Amherst, — Fox and G. E. Post. Syria, 1873. 772.

Hearles, N. (?) India, 1885.

Hearsey, Brigadier John Bennett. Punjaub, 1850.

Hector, Sir James. New Zealand, 1864–85. 429.

Hector, Sir J., and J. Buchanan. New Zealand, 1867. 24.

Hedin, Sven. Tibet. 1899. "Complete set."

Heer, Oswald. Europe, 1865. 421.

Herr, O., and C. G. Bruegger. Europe, 1863. 30.

Heldreich, Theodor von. Greece, 1849–98. Herb. Graec. norm., cent. i–xv., etc. 1500, etc.

Helfer, —. *See* GRIFFITH and HELFER.

Heller, A. Arthur. 1894–99. North Mexico, 180; Idaho, 55; Texas, 489; Hawaii, 540; in all 1274.

Henchman, John. Cumana, Mexico, 1835–40.

Henderson, A. Guinea, 1880. 16 (Ferns).

Henderson, Dr. George. Yarkand, North West India, 1871–85; 1375, etc.

Henderson, Col. Frederic. India, Himalaya, 1875–77. 29 (Ferns)

Henning, —. New Guinea. (Fungi).

Henriques, Dr. Julius A. (per). Portugal, 651; St. Thomas, Africa, 307; 1876–79.

Henry, Dr. Augustine. 1886–98. Central China, 5000 ?; Formosa, 2000; Hainan, 990.

Henry, Mrs. A., and **Miss Mary Henry.** Colorado, 1895.

Henry, Rev. B. C. Hainan, 1886. 103.

Hens, Franz. Congo, 1888–89. 258.

Henshall, John. Java, 1850–56.

Henslow, Rev. John Stevens. Britain, 1826–57.

Hervey, Dudley Francis Amelius. Malacca, Aden, 1886–93. 911, etc.

Hetley, Mrs. New Zealand, 1887.

Heudelot, —. Senegambia, 1838- ?

Heward, Robert. 1839-63. Ferns (ex Herb. T. Moore), 1887.

Heyde, Rev. —. Tibet, 1872.

Hickin, H. J. China and Corea, 1896. 305.

Hickson, Dr. Sydney J. Indian Archipelago, Mexico, Arizona, 1887–90. 45.

Hiern, William Philip. Britain (*Ranunculus*), 1870. 179.

Hieronymus, Georg. Argentina, 1880. 179.

Higgins, Rev. Henry Hugh. West Indies (Crypt.), 1876. 142.

Higginson, Walter. Lagos, 1890. 20.

Hildebrand, Friedrich Hermann Gustav. (Cult. *Oxalis*), 1887.

Hildebrandt, Johann Maria. 1875–84. Tropical Africa, Madagascar. 2253.

Hill, H. C. N.W. Provinces, India, 1899. 35.

Hill, Walter. Australia, 1859–79.

Hillebrand, William. Honolulu, etc., 1862–80.

Hinds, A. J. Britain, 1896.

Hinds, Richard Brinsley. 1842–44. "Sulphur" collections.

Hitsch, G. Servia, 1891. 154.

Hobkirk, Charles C. P. Britain, 1874.

Hobson, Lt. Col. Julian Campbell. India and Archipelago, 1874–75.

Hobson, Edward. Britain (Mosses), 1875. Ex Herb. Moggridge.

Hobson, Commissioner H. Edgar. Tibet, 1897.

Hochstetter, Christian Friedrich. 1843-45 (Unio itin. etc.). *See also* HOHENACKER.

Hoey, Henry Edwards. North America, 1853–62.

Hoffman, Dr. Carl. Costa Rica, 1853– ?

Hohenacker, Rudolph Friedrich (Per ?). c. 6280. Caucasus, ed. II., pars 1ma., 570 ; id. coll. 6., 55 ; coll. 7, 78. Europe :— Volhynia, leg. BESSER, 32 ; Pl. Jurae helvet. n. 400–760 ; Alp. vales. 245 ; Alp. rhaet. 240 ; Alp. Glarus, n. 210-370 ; Alp. Tirol. 175 ; Germ. med. et bor., n. 185–1300 (in all 2395). Chili, PHILIPPI det. GRISEBACH, iv. v. n. 82–152 ; Surinam, KAPPLER, det. GRISEBACH, section 8, n. 40–100 ; NOE, Pl. Mesopot. det. BOISSIER, n. 40–145 ; HOCHSTETTER, A., Napol. det. GUSSONE, 325 ; SCHIMPER, Abyss., Azov. det. Hochstetter, n. 200–475, and 300–1600, LECHLER, Terrae Sueviae et Silvae nigrae, n. 390–1630.

Holböll, Carl, per J. W. HORNEMAN. Greenland, 1825.

Holl, Friederich, and — **Schmidt.** "Deutschl. Schwämme," 1865. Lief. 1–8.

Holland, J. A. Old Calabar, 1897–98. 157.

Hollrung, M. New Guinea, 1889. 364.

Holme, Rev. Henry Redmayne. Montserrat, West Indies, 1879. 66 (Ferns).

Holmes, Edward Morell. Britain (Crypt.), etc. 1874–99.

Holmes, Sir William Henry. Guiana, 1863. 100 (Orchids).

Holmes, Sir William Richard. Diarbekr, 1858.

Holmwood, Consul Frederic. East Tropical Africa, 1883.

Holst, C. Usambara, 1894. 1345.

Holst, C., and others. Usambara, 1897. 471.

Holten, Hermann von. Columbia, 1855 ? n. 1–1004.

Holub, Dr. Emil. South Africa, 1883. c. 600, and 42 (Algae).

Holway, Edward W. D. North America, 1899. 86.

Hombron, Bernard, and others. New Zealand, 1880. 88.

Home, Sir Everard. Australia, New Zealand, 1846–51.

Hooker, Sir Joseph Dalton. 1843–98. Europe, India, Morocco, Aden, New Zealand.

Hooker, Sir J. D. and **Major Madden.** Aden, 170 ?

Hooker, Sir J. D. and **Thomas Thomson.** Himalaya, 1863. — ?

Hooker, Sir William Jackson. Britain (and Herb).

Hooker, William. New Zealand, 1870–71. 46.

Hooper, H. D. M. West Indies, Honduras, 1886. 79.

Hope, Charles William Webley. North India, 1889. 29 (Ferns).

Hoppe, David Heinrich. Europe, 1863. 107 (chiefly *Carex*).

Hore, Rev. William Strong. Britain, Malta, 1840–45.

Horne, Charles. Trinidad, 1864.

Horne, John. Mauritius, Seychelles, Fiji, 1865-83. 2290, etc.

Horneman, Jens Wilken. Denmark, Greenland, 1818–36. 1867. *See also* TREVELYAN.

Horner, A. C. Greenland, 1875. 95.

Horsburgh, Rev. H. Java, 1856.

Horsfield, Thomas. Java, 1860 ? (Collector's own set, bought at sale ; it wants the Monocotyledons and Cryptogams).

Horsley, Lt.-Colonel Frank. Travancore, 1874.

Hose, Right Rev. George Frederick, Bishop of Sarawak. Borneo, Malaya, 1886–95. 279. (Ferns and Lycopods.)

Hosie, Alexander. China, Formosa, 1885.

Hostmann, Dr. F. W. Surinam, n. 1–1400. 1841–43. (Ex Herb. Bentham.)

Hough, Mrs. Walter. *See* ZUCK, M.

Houzeem, L. 1892. (Cult. Orchids).

Huebsch, Anton. Central America, 1887. 84.

Huebener, J. W. P. Europe, 1878. 105 (Hepaticae).

Huegel, Carl, Baron von. Australia, 1842-46.

Huet du Pavillon, A. Armenia, South Europe, 1853–56. Armenia, coll. 1853. 550 ; Sardinia, Appenines, 2–300 ; Alps, Col de Tenda, 200 ; Alps, Valais, 400 ; Spain and Algeria, coll. BOISSIER and REUTER, 100 ; Sicily, coll. 1856. 606 ; Algeria, 4–500 ; GERMAIN'S Chili coll. — ?

Hugh, Father. China, 1898.

Huguenin, —. Europe, 1863.

Humblot, Léon. 1883–85. Madagascar, 608; Comoro Isl., 446.

Humboldt-Stiftung, per SCHWEINFURTH. Tropical Africa, 1877. 1705.

Hume, Andrew. Chagos Islands, 1883. 23.

Hunt, George Edward. Britain (herb. Mosses, presented by John Hunt), 1873.

Hunter, Alexander. Madras, 1851–61.

Hunter, Major Frederick Mercer. Aden, Arabia, 1880–84. 375.

Hunter-Weston, Lt.-Colonel Gould. Baltistan, Kashmir, 1891. 113.

Huntingdon, Dr. —. Italy, 1879.

Hurst, Capt. Henry Alexander. Mediterranean region, Egypt, Nubia, 1870–81. 164.

Husnot, Pierre Tranquille. France, Mosses, fasc. 1–18. 900. West Indies (per), 470. 1873–97.

Hutchinson, Major Alexander Hadden. Himalaya, 1876.

Hutchinson, Thomas T. Tropical Africa, 1851–59.

Huter, Rupert. Tirol, Spain, Himalaya, 1866–95. 2546.

Hutton, Henry. Cape, South Africa, 1859–80. 84, etc.

Hutton, Miss. Cape, 1896.

Hyslop, Dr. James Macadam. Bagdad, 1852–54.

I'Anson, —. 1888. (Orchids).

Ibbotson, Henry. Britain, 1845.

Ibrahim, —. Marocco, 1881. 82.

Ilchester, William Thomas Horner Fox Strangways, 4th Earl. *See* STRANGWAYS.

Iliff, William Tiffin. Syria, West Indies, 1845–46.

Imray, Hon. John. Dominica, 1859–63.

im Thurn, Everard Ferdinand. British Guiana, 1879–85. 1005.

Inchbald, Peter. Britain, 1850–76.

Ingram, —. Gambir, 1866. 74.

Irving, Alexander. (Fungi). 1856.

Irving, Edward George. Abbeokuta, 1844–55.

Jackson, Benjamin Daydon. Britain, 1874.

Jacob, Capt. E. Chusan, Hong Kong, 1863–64. 20.

Jaeger, —. Haiti, 1892. 143.

Jaeggi, Jacob. Europe, 1876–77. 95.

Jaeschke, Rev. H. 1865–70. Ladak, Cabul, Lahul. 433.

Jamaica, Government Botanical Department (per), 1880-86 489.

James, Frank Linsly, and **J. Godfrey Thrupp.** Somaliland, 1885. 224.

James, Col. Sir Henry (per). Sinai Survey, 1870. 176.

James, H. E. M. North China, Manchuria, 1886–87. 163, etc.

James, Thomas Potts. North America, 1850.

Jameson, Dr. William (of Quito). Ecuador, Argentina, n. 1–829 and 693. 1827–65.

Jameson, Dr. William (of Saharanpur). Himalaya, 1860 ?

Jameson, Consul George. Kiukiang, 1886.

Jamieson, G. H. T. "Salt Range," 1878. 39.

Jamin, P. Algiers.

Janka, Victor von. Transsylvania, Turkey, 1864–72. 121.

Jayeteleki, —. Ceylon, 1857–58.

Jefferies, T. L. Persia, 1888. 26.

Jenkins, Col. Francis. Assam, 1842–50. n. 1–623 (ex Herb. Bentham).

Jenman, George Samuel. Jamaica, British Guiana, 1875-99. 4357, etc.

Jenner, J. H. A. Britain, 1879.

Jennings, Alfred Vaughan. New Zealand, 1890.

Jennings, Capt. Robert Henry. Persia, 1886. 36.

Jepson, Willis Linn. North America, 1897.

Jerdon, Thomas Caverhill. India, 1874. (Ferns).

Joad, George Curling. Europe, 1871–79. 428 (Herb.), 1881–82.

Johns, Rev. Charles Alexander. Britain, 1834–47.

Johnson, Rev. E. Travancore, 1856–67. 258, etc.

Johnson, Hon. E. P. Yucatan, 1850. n. 1–141 (Herb. Bentham).

Johnson, James Yate. Madeira, 1855–77.

Johnson, Prof. Thomas. Ireland, 1897.

Johnson, Ven. Archd. William Percival. Nyassa, etc., 1884–99. 200.

Johnson, William H. Gold Coast, 1898. 16.

Johnston, George. Britain, 1830–35.

Johnston, Surg.-Maj. Henry Halcro. 1880–97. Afghan., Egypt, Orkneys, Mauritius. 370, etc.

Johnston, Sir Henry Hamilton. 1883–88. Sierra Leone, Congo, Angola, Nubia, Kilimanjaro. 1436.

Johnston, Surg.-Maj. John Wilson. Afghan, 1880–81. 41.

Johnston, Dr. Wingate (per). New Zealand, 1837.

Joliffe, John. New Zealand, 1856.

Jones, Marcus E. Utah, 1881.

Joshua, William. Britain, 1885. 311 (Algae).

Jordan, Alexis. France, 1852.

Jungner, J. R. Cameroons, 1893. 30 (Hepaticae).

Kaernbach, Ludwig. New Guinea, 1894. 25.

Kalbreyer, W. 1877-84. West Tropical Africa, Columbia. 1409.

Kanitz, Agost. Hungary, 1892. 50 (Mosses).

Kappler, A. Surinam, 1845. *Also* per HOHENACKER, 1863. 60.

Karelin, Gregor. Persia, Turkestan, 1838. 512, etc.

Karelin, G., and P. Kiriloff (per A. RICHTER). 1846.

Karo, Ferdinand. Dahuria, 1892–94. 536.

Karsten, Hermann. Columbia, 1846.

Karsten, Dr. Pehr Adolf. Finland, 1883. Fungi ; fasc. i.–x., n. 1–1000.

Kaurin, Rev. Chr. Norway, 1883–95. 19 (Mosses).

Keck, Dr. K. Mesopotamia, Kurdistan, 1889. 324.

Keenan, R. L. Cachar, 1874. 550.

Keit, W. Ireland, 1874. 27 (Fungi) ; Natal, 1878. 32.

Kellermann, William A. Kansas, 1890. 50 (Fungi).

Kennedy, —. Swellendam, 1871.

Kent, Adolphus Henry (per). 1889. 6 (*Masdevallia*), 27 (cult Ferns).

Kerber, Ed. Mexico, 1883. 200.

Kerner von Marilaun, Anton. Europe, 1883–91. 200; Fl. Exs. Austr.-Hung. n. 1–2800. *See also* VIENNA; WETTSTEIN.

Kerr, J. G. Rio Pilcomayo, 1891. 272.

Kiær, Franz. Europe, 1880–84. 255.

Kiærskou, Hjalmar Frederik Christian. Mexico, Greenland, Iceland, 1893. 255 ?

Kidd, James. Australia, 1845.

Kidder, Dr. —. Kerguelen, 1879. 55.

Kidston, Robert (per R. BRAITHWAITE). Tanganyika. (Mosses.) 1890.

Kienast-Zolly, Messrs. L. Mexico, 1898. (Types of Reichenbach's Orchids.)

King, Capt. Phillip. Patagonia, Australia, 1843 ? Chili (ex Herb. Brown) 1879.

King, Sir George. 1875–97. India, Malaya. 8289, etc.

Kingo Miyabe. *See* MIYABE, K.

Kingsley, Miss Mary Henrietta. Cameroons, 1896.

Kirelow (or **Kiriloff**), **Porphyrius** (per A. RICHTER). Central Asia.

Kirk, Sir John. 1857–96. Tropical Africa, Seychelles, Comoro Islands, Somali-land.

Kirk, Thomas. New Zealand, 1866–95. 1210.

Kirkby, Rev. W. Britain, 1873.

Kitching, Langley. Madagascar, 1880. 49.

Klatt, Friedrich Wilhelm (per). (Irids), 1864.

Klausenberg (Kolósvar) **Garden** (per A. KANITZ). Europe, 1882. 285.

Klotzsch, Johann Friedrich. 1837–55 —; Herb. Mycol., 1884. 800.

Kneucker, J. Andreas. Europe (*Carex*), Lief. i.–v., 150.

Knight, Dr. Charles. New Zealand, 1852–83.

Knobel, William. Cape, 1878. 27.

Koch, Max. South Australia, 1899. 314.

Koch, Wilhelm Joseph Daniel. Europe (*Salix*). *See* LEEFE.

Koorders, S. H. Malay Archipelago, 1894–98. 1366, etc.

Kotschy, Theodor. 1842–77. Aleppo, n. 1–397; Æthiopia, n. 1–581; Mesopotamia, n. 1–606; Cyprus and Syria, 401; Orient, 40; Nubia, 215. *See also* UNIO ITINERARIA, 1843–44.

Kraenzlin, Franz (per). Andes, Timor-laut, etc., 1886–99.

Kralik, Louis. 1849–83. Algeria, c. 150 ; Corsica, Egypt, Nubia, Marocco, 228.

Krause, G. A. Gold Coast, 1889. 103.

Krauss, Ferdinand. Cape, Natal, 1830-43, n. 1–482.

Krempelhuber, August von. India, South America, 1874. 192.

Kreuter, F. Austria, 1853–59.

Kückenthal, Georg. Europe, 1899. 29 (*Carex*).

Kuhn, Dr. Max. Madagascar, 1869–84. 12.

Kunth, Carl Sigismund. 1869. (ex Herb.)

Kunze, Gustav. 1837–82. (Ferns.)

Kunze, J. 1879–82. (Fungi) cent. i.–vi. ; fasc. 1–12. 600.

Kuntze, Carl Ernest Otto. 1887–94. 1140.

Kurtz, Frederico. Lord Auckland Island, Argentine, 1877–95. 47.

Kurz, Sulpiz. Andamans, Burma, India, 1867–78. 1528.

Labillardière, Jacques Julien Houton de. 1835. 300 (ex Herb.)

Lacaita, Charles Carmichael. Greece, Italy, 1880–84. 95.

Lace, John Henry. Afghanistan, Beluchistan, North-West India, 1887–92. 1424.

Laidley & Co. (per O. WEIGEL). 1895. Central Africa. 614.

Lamb, F. H. North America, 250 ; West Mexico, 150 ; 1898, 400.

Lambert, Aylmer Bourke. 1832–41. (ex Herb.)

Lamington, Lord. *See* COCHRANE-BAILLIE.

Lamson-Scribner, Frank. North America, 1896–99. 330.

Landsborough, Rev. David. Britain, 1835–39.

Lange, Johan Martin Christian. Denmark, Greenland, 1868–82. 738.

Langlassé, —. Mexico, etc., 1899. c. 211.

Langley, Samuel Pierpont (per), North America, 1895. 17.

Lapham, Increase Allen. North America, 1832-63.

Larbalestier, Charles Du Bois. Britain, Channel Islands, (Lichens) 580. (Lichen Herb., fasc. 1–9.)

La Savinière, de. Java, Celebes, 1886. 237.

La Trobe, Charles James. Australia, 1855.

Last, J. T. East Tropical Africa, Madagascar, 1885–99. 599.

Laurent, Emile (per). Congo, 1897.

Lauterbach, Dr. Carl. New Guinea, Kaiser Wilhelmland, 1898, 20.

Law, John Sutherland. Bombay, 1842–56. 23.

Lawrence, R. W. Tasmania, 1837.

Lawrence, Sir Trevor. (Cult. Orchids, Reichenbach's types), 1891–99. 46.

Laws, Dr. —. N'yassa, 1878.

Lawson, Marmaduke Alexander. Tasmania, 1882; Madras, 1884-95. 246.

Lay, George Tradescant. Mexico, North West America, 1828.

Layard, E. Orient, Kurdistan, New Caledonia, 1879–89. 87.

Lea, Thomas Gibson. North America, 1842.

Lechler, Wilibald. Chili, 925; Peru, 345; Magellan and Falkland Islands, 1858–59. *See also* HOHENACKER, 1863; altogether, Phanerogams, 2173; Mosses, etc., 289.

Ledebour, Carl Friedrich von. Altai, 1827–49.

Leeds, Edward. 1876. Herb. and cult. plants. 782.

Leefe, Rev. John Ewbank. Britain (especially *Salix*); Queensland, etc. (Herb.) 1869–89. 1753, etc.

Lefebre, —. Algeria, 1865.

Lefroy, Gen. Sir John Henry. Bermuda, 1842–80; 1885. (His Tasmanian collection was sent to St. Petersburg.)

Leggett, William Henry. North America, 1873. 25 (Lichens).

Lehmann, Alexander. Asia, 1863. 198.

Lehmann, Johann Georg Christian. Asia (ex Herb. ?), 1824–63.

Lehmann, Friedrich Carl. Columbia, Central America, 1883–86. 72.

Le Hunte, George Ruthven. Pacific Islands, 1884. 43.

Leibold, Friedrich Ernst. Mexico, Cuba, Arkansas, 1847–65. "Musci Germaniæ," 1882. 132.

Leiburg, John B. North America, 1890. 39 (Mosses).

Leichtlin, Max. (Cult. plants), 1898. 24.

Leighton, Rev. William Allport. Europe, 1864-82. (Herb).

Lemann, Charles. 1841–65. (ex Herb.)

Lemmon, John Gill. California, Arizona. 1875–86. 362.

Lenormand, René. California, New Caledonia, 1842–71. 1445.

Lepervenche, Meyrien. *See* MEYRIEN, L.

Lépine, —. India, 1886. 25.

Leprieur, —. Guiana, 1883. 72 (Ferns).

Leskowatz, —. Servia, 1891. 129.

Lester, Ven. Archd. George Mackenzie. Queensland, 1898.

Lester, J. Brown. Gambia, 1891. c. 750.

Letourneux, Aristide. Egypt, Orient, 1878-83. 423.

Lettsom, W. G. (per). Montevideo, 1858–62.

Leveillé, Augustin Abel Rector. Europe, 1897. 39 (*Epilobium*).

Levi-Morenos, David. Italy (Algae), 1892. Phyc. Ital. n. 150–200. *See also* DE TONI, J. B., and LEVI-MORENOS.

Levier, Dr. Emile. Andamans, 1891.

Levinge, Harry Corbyn. Malaya, Himalaya, Ireland, 1876–91. 97, etc.

Lévy, Paul. Nicaragua, 1872. 152.

Lewis, Hon. S. Sierra Leone. 1870.

Leybold, Friedrich. Chili, 1862–75.

Leycester, A. R. Australia, 1859–61.

Leyden, Herbarium. Malaya, 1869–82. 298.

L'Herminier, Edm. de. West Indies, Guadeloupe, 1847. — (Ferns).

Libert, Mdlle. Marie Anne. Ardennes, 1877. 400 (Crypt.).

Liebmann, Frederik Michael. Mexico, 1854–93. 943.

Lindberg, G. A. Brazil, 1865. — (Ferns).

Lindberg, Sextus Otto. Finland, Iceland, Scandinavia, 1868–94. 1771.

Lindeberg, C. J. Scandinavia, 1880–88. (*Hieracium*, 3 fasc.; *Rubus*, 52.)

Linden, Jean Jules. 1854–94. Mexico, Tropical America, Columbia.

Linden, Lucien. Tropical America, 1893–94. 31.

Lindheimer, Ferdinand. Texas, 1845 ?

Lindig, Alexander. Columbia, 1869. 300.

Lindley, Dr. John. 1828–59; 1865 (Orchid Herb.).

Lindman, C. Brazil and Paraguay, 1899. 69.

Lindsay, Dr. William Lauder. New Zealand, Britain, Iceland. 1862–76. 843.

Linney, M. Albert. Falkland Islands, 1895.

Linton, Rev. Edward Francis. Britain, 1887-98. 13.

Linton, Rev. E. F., and **others.** Britain, 1892–98. (*Rubus*, fasc. i.–v., 125 ; *Hieracium*, fasc. i.–iii.) 75.

Linton, Rev. E. F., and **Rev. William Richardson Linton.** Britain, 1889. (*Rosa.*)

Lippincott, James Starr. California, 1876. 62.

Lippold, Dr. —. Madeira, 1837.

Lisboa, Dr. José Camillo. Bombay, 1891–94. 22.

Lisbon. Escola Polytecnica. 1874–79. Europe, 293 ; Brazil, Angola, 995.

Lister, Arthur. Britain, 1889–90.

Lister, Joseph Jackson. Christmas Island, 88 ; Bhotan, Pacific Islands, 62, etc. 1888–91.

Littledale, St. George R. Tibet, 1895.

Littledale, Mrs. St. G. R. Mongolia, 1898.

Livingstone, Dr. David. Tropical Africa, 1856-74. (Also 8 plants "found in his memorandum book.")

Lloyd, George N. Britain, 1831–52.

Lobb, Thomas. Malaya, Singapore, Java, 1854–98 ; n. 1–486, and 900.

Lobb, William. California, 1858–84. 1139, etc.

Lockhart, David. Trinidad, 1829–42.

Lockhart, John. St. Vincent, Trinidad, 1832–44.

Lockwood G. Kharakhúr (Behar), 1877–53.

Loder, Sir Edmund Giles, Bart. 1893. —

Loddiges, Conrad. Cult. plants, 1831–46.

Loddiges, George. Cult. plants, 1831–46.

gan, H. T. New Zealand, 1865–67. 95.

ue, Miss Kate F. G. Australia, 1888–89. 168.

r, A. Philippines, 1897–98.

Lojacono, Michele. Italy, 1885–89. 302.

Lojka, Hugo. Europe, 1875–87. 646.

Lombe, Dr. Thomas Robert. Australia, 1894.

Lombe, Rev. E. New Zealand, 1873. (Ferns.)

London. India Museum, 1874-80. 235.

—— Pharmaceutical Society, 1895.

London. University College, 1879. 16.

Longman, W. Rio Janeiro, 1872. 47 (Ferns).

Loomis, —. Ascension, 1891.

Lord, John Keast. Red Sea, 1869. 197.

Lord, J. K., and —. Bauermann. Sinai, 1868. 31 (Ferns).

Lorentz, Paul Guenther. South America, Urugnay, 1875–81. 1570.

Lorentz, P. G., and others. Argentine.

Low, Hugh, & Co. 1849–93. (Cult. plants; Reichenbach's Orchid types, etc.)

Low, Sir Hugh. Borneo, Malaya, 1883.

Lowe, Rev. Richard Thomas. 1827–64. Madeira, Morocco. 1675, etc.

Lowne, Benjamin Thompson. Syria, 1864. 991, etc.

Lubbock, The Right Hon. John, 1st Baron **Avebury.** 1887. 397 (seedlings).

Lucas. *See* FREEMAN and LUCAS.

Lucas, Charles James. Cult. Orchids. 1893.

Ludwig, Carl Friedrich Wilhelm, Baron von. Cape, 1835-39.

Luehmann, J. George. Australia, 1879–99.

Luerssen, Christoph. Australia, Polynesia, 1880. 340.

Lugard, Capt. Edward James. Bechuanaland, c. 250; Ngamiland, n. 1–228. 1897–99. c. 478.

Lumholtz, Carl. Australia, 1884.

Lumholtz, Dr. —. Mexico, 1894. 547.

Lunt, William. Hadramaut, c. 300; Aden, 150. 1894. c. 450.

Luscombe, John. Britain, 1851.

Lyall, Dr. David. Oregon Boundary, 1848–62.

Lyell, Mrs. Katherine M. 1855–76. (Ferns.)

Maack, Richard. 1863–77. Asia, Ussuri, Japan. 859, etc.

Mabille, Jules P. Corsica, 1865-68. 412.

MacArthur, Sir William. Australia, 1848–63.

McArthur, Capt. —. South Australia, 1848? 228?

McCabe, Joseph. Lake Ngami.

Macarthy, Rev. J. China, 1878. 23.

McCalla, William. Ireland, 1841. (Algae.)

McCatty, Dr. A. G. Jamaica, 1874. 13.

MacClelland, Dr. John. Pegu, Burmah, 1855.

McClounie, J. Milanji, 1895. 20.

McClounie, J., and **A. Whyte.** Milanji and Zomba, 1896. 94.
See also WHYTE, A., and J. MCCLOUNIE.

McConnell, Frederick Victor, and **John Joseph Quelch.** Roraima, 1899.

Macé, —. Coromandel, 1886. 175.

Macfadyen, Dr. James. Jamaica, 1837.

MacGibbon, James. Cape, Crozets, 1856–64.

McGillivray, John. Australia, 1850? n. 1–256.

McGillivray, John, and **W. G. Milne.** Brazil, Cape, 1850? c. 400.

McGregor, Sir William. New Guinea, Louisiades, 1889–90. 81.

McIvor, William Graham. Nilghiri, 1848. n. 1–54.

Mack, Mrs. J. India, Assam, 1837.

Mackay, James Townsend. Ireland (and cult. plants), 1830–62. 188.

McKen, Mark John. Natal, 1848–71.

McKen, M. J., and **J. Buchanan.** Natal, 1867. 133 (Ferns).

McKenzie, Mrs. Zululand, 1882. 88.

McLea, John H. Graaf-Reinet, Cape, 1872–73.

Maclean, Adm. John. Peru, 1837?

Maclear, Capt. John Fiot Lee Pearse. Christmas Island, 1887. c. 23.

Macleay, Alexander. Tasmania, 1859–73. (Herb. Ferns, 357; Algae, 630).

McLeay, G. Syria, 1863.

McNab, Dr. Gilbert. Jamaica, 1847-89.

McNab, Dr. William Ramsay. Cape, 1890. 689, etc.

MacNab, James. Britain, 1832.

Macoun, James Melville. Canada, 1895–99. 1394.

Macoun, John. Canada, 1863–95. 5519, etc.

MacOwan, Peter. South Africa, 1865–99. c. 4682.

MacOwan, P., and **Harry Bolus.** Cape, 1884–88. (Cent. i.–ix. 900.)

MacPherson, J. New Jersey, 1895.

Macrae, James. Malden Island, 1885.

Madden, Major Edward. India, 1847–54. c. 470. *See also* HOOKER, J. D., and E. M.

Mader, P. A. Cape, 1874.

Mahon, J. Zomba, 1898.

Maiden, Joseph Henry. Australia, 1895–99. 107.

Maingay, Dr. Alexander Carroll. China, Japan, Malacca, 1864–72. Herb. 2585.

Mair, Mrs. Sierra Leone, 1875. 22.

Maille, —. (per Cosson). 1871. 2182.

Major, Dr. C. I. F. *See* FORSYTH MAJOR, C. I.

Malmberg, Dr. Maur. Lapland, 1871. 86.

Mandon, Gilbert. Bolivia, Madeira, 1863–83. 3512 (incl. n. 1–1506).

Mann, Gustav. 1859–92. Tropical Africa, Teneriffe, Bengal, Assam, Ascension. 2582, etc. (incl. n. 1–2386).

Mann, Horace, and **William T. Brigham.** Sandwich Islands' 1866. 117.

Mansell-Pleydell, John Clavell. Britain, 1875.

Maries, Charles. 1873–81. China, Japan, Formosa, Vancouver. 142, etc.

Marion, —. North Africa, 1878. 92.

Mark, Edward W. Bogotá, 1856.

Markham, Sir Clements Robert. Andes, 1859–73.

Marloth, Dr. Rudolf. Hereroland, Cape, 1888–91. 75.

Marsh, William Thomas. Jamaica, 1854–62. c. 2000.

Marshall, Rev. Edward Shearburn. Britain, 1891. 95.

Marshall, G. A. K. South Africa, 1896.

Marten, Mrs. F. M. Australia, 1889. 28 (Fungi).

Martins, Charles François. Europe (and cult. plants), 1870. 32.

Martius, Carl Friedrich Philipp von. Brazil ?

Mason, Miss M. Algeria, 1899. 46.

Mason, Nathaniel Haslope. Madeira, 1855–67. 172, etc.

Massalongo, Caro. Italy, 1878–83. 151, etc. (Hepaticae).

Massee, George Edward. Britain, 1886. 33.

Masters, Maxwell Tylden. Britain (cult. Conifers), 1880–90. 22

Matsumura, Jinzo. Japan, 1893. 1350.

Mathews, Andrew. Peru, Society Islands, 1829–41, 2111, etc.

Mathews, William. Britain, 1885.

Maunsell, F. R. Asia Minor, 1893.

Maximowicz, Carl Johann. Brazil (per ?), Japan, Manchuria, Central Asia, China, 1867–86. c. 1000.

Maxwell, George. Australia, 1861–74.

Maw, George. Europe, 1870–86. 83.

Mazé, H. Guadeloupe, 1890. 1982.

Meade, Col. Richard John. 1873. India. 104 Grasses.

Measures, Robert Herbert. (Cult. Orchids.)

Measures, Richard J. (Cult. Orchids, Reichenbach's types, etc.) 1892.

Meller, Dr. Charles James. Tropical Africa, Johanna Island, Mauritius, Réunion, 1861-68. 86, etc.

Mellersh, Capt. A. Pegu, 1855.

Mellichamp, J. H. Carolina, 1880.

Melliss, John Charles. St. Helena, 1863–72. 273, etc.

Mello, Joaquim Correa de. Brazil, 1865–74. 39.

Melvill, James Cosmo. Britain, 1899.

Melville, M. H. Tropical Africa, 1855.

Mennell, H. T. Europe, 1879.

Menzies, Archibald. North-West America, Cape, 1826–40.

Merrifield, Mrs. Mary Philadelphia. Britain, Australia, 1873-81. 14.

Mertens, F. 1829 ? c. 2000.

Mesny, Col. China, 1881. 22.

Metcalfe, P. H. Norfolk Island, 1884. 94.

Metz, —. (per Hohenacker). 1851.

Meyer, Dr. Adolf Bernard. New Guinea, 1874.

Meyer, Carl Anton. Asia ? 1836–53.

Meyer, Ernst. Europe, 1845.

Meyer, L. C. Tobago, 1879. 33.

Meyrien, Lepervenche. Mauritius, 1837.

Micholitz, W. New Guinea, Louisiades, 1898. 12.

Michon, —. *See* **SAULCY, L. F. J. C. DE, and —. MICHON.**

Middendorff, Alexander Theodor von. Siberia, 1885. 169.

Middleton, M. Bermuda, 1873. 125.

Miers, John. South America, 1828-78. Ex. Herb., 102 parcels.

Milde, Dr. Julius. Europe, 1864–69. 12.

Miles, Elizabeth. British Columbia, 1864.

Mill, John Stuart. Britain, Europe. Herb., 2350 kept, the rest sent to Cambridge, U.S.A.

Millen, Henry. Lagos, 1892–96. 521.

Millett, Charles. China, 1825–31.

Milligan, Dr. Joseph. Tasmania, 1849–68. 137.

Mills, Mrs. E. British Columbia, 1864.

Millson, Alvan. Yoruba, Lagos, 1890–91. 148, etc.

Millspaugh, Charles F. Yucatan, 1897.

Milne, John. Sinai, Iceland, Newfoundland, 1874. 49, etc.

Milne, William Grant. 1856–70. Pacific, Fernando Po, New Zealand, Voyage of "Herald." 979, etc.

Miquel, Friedrich Anton Wilhelm (per). Java, Sumatra, Japan, 1841–67.

Mitchell, E. O. Honduras, 1875-77.

Mitchell, James B. Egypt, 1841–43.

Mitchell, Sir Thomas Livingstone. Tropical Australia, 1836? n. 1–149 and 3.

Mitten, William. Britain, 1846–98.

Miyabe, Kingo. Japan, 1893. 237.

Moçino, José Mariano. Mexico.

Moerenhout, —. Tahiti, 1835.

Moggridge, John Treherne. Europe, 1863–75. Herb., incl. Shuttleworth, Boissier (together 1623), Hobson, Reuter, Roux, Cosson, Huet de Pavillon, Joad, Towgood (Australia and New Zealand), Burle, Groves (of Florence), and Motelay.

Moggridge, Matthew. Britain, 1878.

Mohr, Charles. North America, 1879–83.

Molesworth, Miss Caroline. Britain, 1848–60; 1873, Herb.

Moll, Dr. Jan Willem. 1894. 58. (Papaverac.)

Möllendorff, —. Pekin, 1880. 540.

Moller, —. St. Thomas (Africa), 1886. 84.

Moloney, Sir Cornelius Alfred. 1882–96. Gold Coast, Lagos, British Honduras. 410.

Montagne, Jean François Camille. Europe, 1837–44.

Monteiro, Joachim John. Ambriz, Angola, Delagoa Bay, 1873–78. 346.

Monteiro, Mrs. Rose. Delagoa Bay, 1883–93. 38.

Montford, Rev. G. Sikkim, 1870.

Moore, Charles. 1842–94. New Caledonia, Australia, Lord Howe Island, 975, etc.

Moore, David. Ireland, 1834–55.

Moore, Frederick William. (Cult. Orchids.) 1891–99. 30.

Moore, Spencer Le Marchant. 1893–97. Brazil, 160; West Australia, 157 (Set 3).

Moore, Thomas. 1844–87. Herb. (Ferns). 13,007.

Moore, Thomas T. T. Britain? 1857.

Morice, Capt. George Farquhar. Paraguay, 1853–59.

Moritz, —. (per Mettenius). Columbia, 1857.

Morong, Thomas. Atacama, 114; Paraguay, 370; Pilcomayo, 111; 1891–92. 595.

Morren, Charles Jacques Edouard. 1862–88. Herb. (Bromaliaceae, 14 cases).

Morris, Daniel. West Indies, Honduras, St. Helena, Canaries, 1881–98. 347.

Morris, James. Mauritius, 1851–60.

Moseley, Henry Nottidge. 1873–86. "Challenger" collections, 1398, etc.; Oregon, 159; North Mexico, 134; Arizona; Marocco, 70.

Moss, Dr. Charles Frederick Arrowsmith. Madagascar, 1898. (Lichens.)

Motelay, Léonce. (Ex Herb. Moggridge.) Europe, 1875.

Motley, James. Borneo, 1852–64.

Mott, Frederick Thompson. Oregon, 1881.

Mougeot, Jean Baptiste. Europe, 1823–58. (Cryptogams).

Mougeot, J. B., and C. G. Nestler. Europe.

Moxon, J. E. Cape, 1847–49. (*Zamia.*)

Mudd, Rev. —. India, 1876. 177.

Mudd, Christopher. South Africa, 1884. c. 225.

Mueller, Sir Ferdinand von. Australia, New Guinea, 1850–97. 8018.

Mueller, Frederick. Mexico, 1855 ? n. 2331.

Mueller, Fritz. Brazil, 1868-93. 505.

Mueller, Jean, of Aargau, (per). 1889–97. South America, 51 ; Tropical Africa, 2 ; types of Lichens, 91. 144.

Mulford, Miss A. Isabel. Texas, etc., 1898. 525.

Munby, Giles. Algeria, 1845–*76*. Herb. 4356.

Mund (or **Mundt**), **L.** Cape, 1827–29.

Munro, James. Darjeeling, 1880. 12 Ferns.

Munro, Gen. William. 1848-80. Crimea, 155 ; West Indies, 3 ; Grasses and general Herb.

Munro, Dr. —. New Zealand, 1852 ? 55.

Munroe, Henry F. North America, 1875. 388.

Murbeck, Svanté. *See* NEUMANN, WAHLSTEDT and MURBECK.

Murchison, Dr. Charles. Burma, 1856.

Murphy, —. Formosa, 1870.

Murray, George Robert Milne, and **W. R. Elliott.** Grenada, West Indies, 1886. 37.

Murray, H. B. West Indies (St. Lucia), 1878–83. 82, etc.

Murray, James A. Kurrachee, Sind, 1880–83. 217.

Murray, Johannes Andreas. 1872. Herb., Lot 294, about 4000.

Murray, Rev. Richard Paget. 1887–94. Portugal, 11 ; Canaries, 15.

Murton, H. J. Singapore, Siam, 1878–82. 318.

Myers, Miss Frances J. North America, 1879.

Mysore, Commissioner of. *See* MEADE, Col. R. J.

Naegeli, Karl Wilhelm von. Europe, 1865. 160.

Nairn, Rev. Augustus Kyd. Bombay, 1888.

Nation, William. Lima, Peru, 1862–80. 352, etc.

Nash, George V. Florida, 1895. 1335.

Naudin, Charles. 1865. 23 (Cucurbitaceæ).

Nees von Esenbeck, Christian Gottfried (per). 1826. 54.

Nelson, E. W. Mexico, 1897.

Nelson, William. South Africa, 1880–92. 557.

Nestler, Christian Gottfried. *See* MOUGEOT, J. B., and C. G. N.

Neumann, Leopold Martin, and others. Sweden, 1887. (*Viola*, fasc. i. n. 1–30).

Neumann, L. M., L. J. Wahlstedt, and **S. Murbeck.** Sweden, 1894. (*Viola*, fasc. ii. n. 31–60).

Neve, Dr. Arthur. Baltistan, Kashmir, 1895–98. 28.

Nevill, G. Seychelles, 1867.

New Zealand, Colonial Museum (per). 1875. 168.

New, Rev. C. Kilimanjaro. 1872–75. 58.

Newberry, William Strong. North America, 1888.

Newton, Alfred. Europe, 1880.

Newton, Francis. 1885–97. Tropical Africa, Fernando Po, Timor. 89.

Nicholls, Henry Alfred Alford. 1891–92. Dominica, St. Lucia, St. Vincent. 346.

Nicholson, George. 1882–93. Europe, Carolina. 39.

Nicholson, John. Britain, 1838–43.

Nicholson, T. J. British Central Africa, 1897.

Nicholson, Thomas. Antigua, 1829–33. 93.

Nightingale, Sir Thomas. Pacific Islands, 1844.

Nimmo, Joseph. Bombay, 1834–46.

Nisbet, Dr. John. Burma, 1884.

Niven, Ninian. Cape, 1836–53; 1890. 689.

Nock, W. C., and **R. V. Sherring.** Jamaica, 1881.

Noe, Wilhelm (per Hohenacker). 1863. 105. *See also* TOMMASINI, M., and others.

Nordensjöld, Baron Adolf Erik. "Vega" Expedition, Arctic Regions, 1884. 143.

Nordensjöld, Nils. 1857–59.

Nordpolfahrt Verein (per). East Greenland, 1871. 67.

Nordstedt, Carl F. Otto, and **J. L. Wahlstedt.** 1874. (*Chara*, fasc. i–iii). 120.

Nordstedt, C. F. O. *See* WITTROCK, V. B., and C. F. O. N.

Norris, Sir William. Penang, 1852–60. (Fern Herb.)

Northrop, Mrs. A. R. Bahamas, 1899. 470.

Nutt, W. H. Tropical Africa, 1896. 116 sheets.

Nuttall, Thomas. North America, 1828–58.

Nuttall, Dr. R. K. Rocky and Cascade Mountains, 1873.

1906

Oakeshott, Mrs. Kilimanjaro, etc. 1878 ?

Oates, Charles George. South Africa, 1878. 30.

Oates, Frank. Tropical Africa, 1880 ?

O'Brien, J. South Africa, 1889–96. 29 Orchids.

Örsted (or **Oersted**), **Anders Sandöe.** Mexico, 1853–63. 20, etc.

Oldfield, Augustus Frederick. Tasmania, Australia, 1850–87. 384, etc.

Oldfield, Richard Albert. Sierra Leone, 1851–57.

Oldham, Richard. Japan, Korea, China, Formosa, 1861–66. 1688, etc.

Oliver, Daniel. Europe, 1866–95. 257. *See also* HANBURY, D., and D. O.

Oliver, James William. Burma, 1895.

Oliver, W. T. North America, 1870–72. (Fasc. 1–5. *Carex*, etc.)

Olney, Stephen T. North America (*Carex*, etc.), 1871–72.

O'Neill, H. E. Inhambane, 1883.

Orcutt, Charles Russell. California, 1883.

Orphanides, Theodor Georg. Greece, 1867–87. 1421.

Osburn, Miss. Syria, 1863–64. 220.

O'Shanesy, Patrick Adam. Queensland, 1882.

Oudeman, Cornelius Anton Jan Abraham. Netherlands, 1885. 300 (Fungi).

Owsl, Miss. Madagascar, 1876.

Oxley, Thomas. Singapore, 1848–52.

Ozanne, J. H. Gambia, 1893. c. 50.

Paget, Sir James, Bart. Britain, 1835.

Paillardot, —. Syria, 1859. 525.

Paine, J. A. Syria, "Am. Exped.," 1874. 180.

Painter, Rev. William Hunt. Britain (*Rubus*), 1891.

Paiva, Baron do Castello de. Columbia, Portugal, Azores, 1861–87.

Palermo Garden, per A. TODARO. 1889.

Palmer, Dr. Edward. Utah, Colorado, Arizona, Mexico, California, 1871-99. 6712. *See also* PARRY, C. C., and E. P.

Palmer, Rev. J. D. British North America, 1855.

Pammel, Louis Herman. Iowa, 1899. 454.

Pancher, Jean Armand Isidore. New Caledonia, 1870. 440.

Pančić, Josef. Europe, 1875. 58.

Paris. Herb. Mus. Par. (per). 1855–90. 4848, etc.

Pappe, Ludwig. Cape, 1845–63. "Large set."

Parish, Rev. Charles Samuel Pollock. Burma, 1859–96. 717, etc.

Parish, Samuel B. South California, 1897. 130.

Parish, S. B., and **W. F. Parish.** South California, 1883. 12.

Parker, Charles Sandbach. Guiana, 1827–43; 1869. (Herb.) Guiana plants kept, the rest to A. Gray, Van Heurck, etc.

Parker, Dr. George Williams. Madagascar, 1880–82. 1421.

Parkinson, John. Mexico, 1841–45.

Parlatore, Filippo. Italy? 1841–60.

Parlovic, —. Servia, 1879. 45.

Parnell, Richard. Britain, 1834.

Parodi, Domingo. Paraguay, 1883–86. 171.

Parry, Dr. Charles Christopher. California, North America, 1863–89. 283.

Parry, Dr. C. C., and **E. Palmer.** Mexico, 1879. 294.

Parry, Dr. C. C., J. M. Bigelow, etc. Mexican Boundary, 1846. 550.

Parry, Sir Edward. Arctic Regions, 1823–51; 1871.

Pascoe, Francis Polkinghorne. New Zealand, 1844–46.

Pasquale, Giuseppe Antonio. 1882. (Cult. pl.?)

Patin, Charles. Columbia, 1871–99. 145, etc.

Pavillon. *See* HUET DU PAVILLON.

Pavon, José. Peru, 1888. (Part of Herb.) c. 114.

Payton, Consul Charles Alfred. Mogador, 1887. 44.

Pazschke, Dr. O. (per). "Rabenhorst, Fungi Europ., Sec. II., Cent. 40," 1894. 100.

Pearce, Richard William. Chili, Peru, Ecuador, 1868–84. 3166.

Pearson, William Henry (per). 1886–88. Natal, Australia.

Pearson, W. H., and **Dr. B. Carrington.** Britain, 1887. 215 (Hepaticae).

Peek, Sir Henry William. Natal, 1885. (Algae.)

Pelly, Lt.-Col. Lewis. Central Arabia, 1865. c. 60.

Pentland, Joseph Barclay (per). 1849–59. Andean Grasses.

Pentzke, —. Daintree River. (Fungi.)

Pareira, Dr. Jonathan. 1841–51. (Part of Economic Herb.)

Perez, George V. Teneriffe, 1886–97.

Péronin, Louis. Cilicia, 1873. 222.

Perrottet, Georges Samuel. Senegambia, 1835.

Perry, William Wykeham. Amsterdam Island, Aden, Somali-land, Corea, China, 1873–83. 620.

Persieh, W. A. Australia, 1883.

Pervillé, —. 1864. Madagascar, 333; Bourbon, 308.

Peter, Robert. North America, 1848. 400.

Peters, Adalbert. Tropical Africa, 1870. (Mosses.)

Peters, Dr. Charles Thomas. Afghanistan, 1885. 15.

Peters, J. M. North America, 1854.

Petherick, John. Tropical Africa, 1863.

Petit, Antoine. Abyssinia, 1865.

Petiver, James. 1899. Six specimens.

Petrie, Donald. New Zealand, 1885-94. 275.

Pfau, Richard. Costa Rica, Guatemala, 1889–94.

Pfundt, Dr. C. Kordofan, Darfur, 1877–78. 758.

Philippi, F. Chilian Andes, 1896.

Philippi, Rudolf Amandus. Chili, 1860–88. 1538, etc. *See also* HOHENACKER, 1863.

Phillips. Mrs. E. Lort. Somali-land, 1895.

Phillips, Consul George W. China, 1882–84.

Phillips, R. C. South Africa, 1878. 12.

Phillips, William. Britain, 1874–81. (Fungi, fasc. i.–iv.) 200.

Pichler, Thomas. 1873–91. Dalmatia, Tirol, Corinthia, Bulgaria, Persia, Lycia. 644.

Pickering, Charles. North America, 1835.

Picot, Capt. Henry Philip. Tibet, 1892–95.

Pierce, Edwin. Beluchistan, 1880. 161.

Pierre, Dr. L. 1880–99. Cochinchina, Cambodia, West Tropical Africa, 1366.

Pike, Arnold. Spitzbergen, W. Tibet, 1894–97; *cf.* DEASY, Capt. H. H. P.

Pike, Col. W. Mauritius, 1869–73. 427.

Pike, Warburton. Canada, Alaska, 1892.

Pinwell, W. S. C. Malaya, India, 1877. 295.

Piré, Louis. Belgium, 1880. 50 (Mosses).

Pittier de Fabrega, Henri F. Costa Rica, 1888. 50. *See also* TONDUZ, A., and H. F. P. DE F.

Pittoni, —. *See* SMITH, Mrs. W., and PITTONI.

Planchon, Jules Emile. *See* DECAISNE, J., and J. E. P.

Plant, R. W. Natal, 1852–58. 106.

Playfair, George Macdonald Home. China, Formosa, 1872–89. 749.

Plowden, Walter. Abyssinia, 1852–57.

Plowright, Charles Bagge. Britain, 1873–83. 303 (Fungi).

Poeppig, Eduard Friedrich. Chili, Cuba, 1834–41. 870.

Pool, William. Madagascar, 1876. 199.

"Porcupine," H.M.S. Malta, 1870.

Porta, Pietro, and G. Rigo. Spain, 1891–98. 698.

Portella, Francisco. Rio, 1877. 96.

Porter, G. India, 1823.

Porter, Sir Robert Ker. Caracas, 1836–41.

Post, Dr. George Edward. Syria, 1873–94; 1898. *See also* HAYNE, W. A., — FOX, and G. E. P.

Potanin, G. W. Central Asia, China, 1889–92. 137. *See also* BATALIN, A.

Potts, Thomas Henry. New Zealand, 1876.

Powell, H. St. Vincent, 1891–93. 74.

Powell, J. T. Britain, 1887.

Powell, Rev. Thomas. Samoa, 1862–90. 951, etc.

Pratt, Antwerp E. China, 1891. 870.

Prain, David. India, 1892–99. 1192.

Preiss, Ludwig. Australia, 1839–45, 1866. 93, etc.

Prentice, Charles. Australia, 1871–74.

Prescott, John D. Russia, 1828 ?

Prestoe, Henry. Trinidad, 1864–85. 83.

Preston, Rev. Thomas Arthur. Britain, 1878.

Preuss, Dr. Paul. Cameroons, 1894. 79.

Pringle, Cyrus G. North America, California, Mexico, 1875–99. 4581. *See also* VASEY, G., and C. G. P.

Prior, Dr. Richard Chandler Alexander (formerly **Alexander**). Cape, 1859–91.

Prout, J. W. Borneo, 1866. 33 (Ferns).

Przewalsky, Nikolai Mikhailovitch. Central Asia, 1892. 58. *See also* BATALIN, A.

Pullen, Capt. William John Samuel. Red Sea, Kurrachee (Algae), Abyssinia, 1859–63.

Purchas, Rev. William Henry. Britain, 1876.

Purdie, William. Trinidad, 1843–55. 132.

Purdy, —. Darfur, 1879. 132.

Purpus, C. A. California, 1897. 264.

Purton, Thomas. Britain (Fungi), 1830.

Purwell, Dr. India, 1863.

Quartin Dillon, Dr. Richard. Abyssinia, 1865.

Quelch, John Joseph. British Guiana, 1895–98. 382. *See also* MCCONNELL, F. V., and J. J. Q.

Rabenhorst, Gottlob Ludwig. Europe (Crypt.), 1873–98. Fungi Europ., cent. 1–42, etc. 8240, etc.

Rabenhorst, G. L., and **C. M. Gottsche.** Europe (Hepaticae).

Raciborski, M. Malaya, 1899.

Radcliffe, Mrs. Kashmir, 1883.

Radde, Gustav. Turkestan, Caucasus, 1863–90.

Raddi, Giuseppe. Italy ? 1819–23.

Raffles, Sir Stamford. Java, 1826.

Ralfs, John. Britain, 1838–77.

Ralph, Thomas Shearman. New Zealand, 1863.

Ramage, G. A. West Indies, 1888–89. 795.

Ramsay, Lady Christina, 10th Countess and 1st Marchioness **Dalhousie.** 1826–47. Madeira, Rio, Cape, Marocco, Penang, India. 600, and 400 dupl.

Rand, Edward S. Brazil, 1891–94. 12.

Rattray, John. West Africa, 1886. 49.

Ravenel, Henry William. North America (Fungi), 1875–82. 1300.

Rawson, Sir Rawson William. Cape, Mauritius, 1849–72.

Reade, William Winwood. Tropical Africa, 1869–70. 30.

Reader, F. M. F. Australia, 1884–93. 311, etc.

Redhead, R. Milne. Syria, 1865.

Reed, Edwyn C. Chili, Mendoza, Juan Fernandez, 1873. 206, and 1787 ex Herb.

Reed, L. D. North America, 1893. 300.

Reeves, John. China, 1829. 250 (ex Herb. R. Brown).

Reeves, Walter Waters. Britain (Ferns), 1869. 247.

Regel, Albert. Central Asia, 1880–90. 3360.

Regel, Eduard August von (per). 1857–70. Asia. 1283, etc.

Regnell, Dr. Anders Fredric. Brazil, 1867–82. 1486.

Rehm, Dr. Heinrich. Europe (Lichens, Fungi), 1884–95. 374.

Rehmann, Dr. Anton. South Africa, Europe, 1878–98. 2887, etc.

Reichenbach, Heinrich Gottlieb Ludwig, and **C. Schubert.** (Lichens). 1823. 400 ?

Reichenbach, Heinrich Gustav. Europe (cult. pl.), 1865. 80.

Reid, Miss (per **Miss K. D. Reid**). China, 1899.

Rein, Dr. Johannes, and **Baron von Fritzsch.** Marocco, 1873. 463.

Reineck, —, and **— Czermak.** Central Brazil, 1899. 98.

Reinsch, Dr. Paul Friedrich. Europe (Algae), 1873–76. 2237.

Repper, Benjamin. Mexico, 1846–48.

Requena, Pedro. Mexico, 1857–58.

Requien, Esprit. Europe, 1829–50.

Reuter, Georges François. Orient, 1847–48. 155 (ex Herb. Moggridge, 1875).

Reverchon, Elisée. Sardinia, Crete, 1882. 846.

Reynaud, —. India, 1886.

Reynolds, —. South Chili, Patagonia, 1837.

Richards, Capt. George Henry. Vancouver, 1858.

Richardson, Capt. Arthur Johnstone. Niger, 1898. c. 40 (Grasses and Sedges).

Richardson, Sir John. 1819–65, 1887. Arctic Regions, British North America.

Richter, Paul. *See* HAUCK and R. R.

Ridley, Henry Nicholas. Malaya, Fernando Noronha, 1889–99. 3398, etc.

Riedel, Ludwig. 1859–99. Brazil, Malaya, etc. 1840.

Rigo, Gregorio. *See* PORTA, P., and G. P.; SINTENIS, P. and G. R.

Riley, A. R. Australia, 1863.

Rink, Hinrich Johannes. Greenland, 1853. *See also* TREVELYAN.

Roberts, —. New Zealand, 1837.

Roberts, G. Jamaica and Oregon, 1855.

Robertson-Glasgow, Charles Ponsonby (formerly **Glasgow**). Singapore, 1898 (Fungi).

Robertson-Glasgow, C. P., and H. N. Ridley. Singapore, 1898. 227.

Robinson, Benjamin Lincoln (per). Cascade Mountains, 1893–96. 70.

Robinson, The Right Hon. Hercules George Robert, 1st Baron Rosmead. 1854–77. West Indies, Japan, China, South Africa, etc.

Robinson, William Wellesley. Malaya, 1877.

Robinson, Sir William. Bahamas, 1877–79. 192.

Rockhill, William Woodville. Tibet, 1893. 54.

Rodie, Dr. British Guiana, 1852.

Rodway, Leonard. Tasmania (Fungi), 1896–99. 141.

Roezl, Benedict. 1871–89. Mexico, Columbia, California. c. 331.

Rogers, H. Cornwallis. Argentina, 1899. 30.

Rogers, Rev. William Moyle. 1880–98. Cape, Britain. 149.

Rohlfs, Dr. Gerhard, and P. F. A. Ascherson. *See* ASCHERSON, P. F. A., and G. R.

Roper, Freeman Clark Samuel. Britain, 1880–84.

Rose, Joseph Nelson. Mexico, 1891–94. *See also* PALMER, E. and J. N. R.

Rosmead, Lord. *See* ROBINSON, H. G. R.

Ross, Henry James. Italy, 1892.

Ross, Sir James. Arctic and Antarctic Regions, 1827–44. Herb.

Ross, Rev. John. 1877–90. North China (Moukden). 1156, etc.

Rostowzew, S. Russia, 1891.

Roth, Dr. —. Syria.

Rothery, Henry Cadogan. French Guiana, Dominica, Madagascar, 1845–53, 1889. (Herb.)

Rottler, Johan Peter. India, 1872. (Herb.) 1918.

Rough, —. Polynesia, 1869.

Roumeguère, Casimir. France (Fungi, cent. 1–61), 6100; (Algae cent. 1–12). 1200.

Roumeguère, C. and F. Dupray. France (Algae, cent. 13). 100.

Roux, —. 1875. (Ex Herb. Moggridge.)

Rovirosa, José N. Mexico, 1890–91. 650.

Rowland, Dr. John William. Lagos, 1890–93. 870.

Rowlee, Dr. W. W. North America (Willows), 1896. 18.

Royle, John Forbes. India, 1832–57, 1895.

Ruegel, —. Cuba, 1887. 352.

Rumsey, Comr. Robert Murray. Gold Coast, 1882. 15.

Ruprecht, Frantz Ivanovitch. Caucasus, 1885. 242.

Rusby, Henry Hurd. Bolivia, Peru, 1888–97. 1565.

Rustler, P. H. India, 1895. 60.

Rutherford, —. South Africa, 1842.

Rydberg, P. Axel. Dakota, 1894. 350.

Saccardo, Pierandrea. Italy. (Fungi, Mycotheca veneta), 1884. 1600.

Sagorski, Ernst. Transsylvania, 1896. 82.

Sagot, Paul. Guiana, 1860–78. 1002.

Sainthill, R. Chili, 1870. 154 (Ferns and Mosses).

St. John, Major Oliver Beauchamp Coventry. Persia, 1872. 46.

St. Hilaire, Auguste. [South America.]

St. Petersburg, Herbarium. Imperial Botanic Garden, 1832–89. 15000, etc. Inclusive of collections by Trinius, Wiedemann, Szowits, Veesenmeyer, Riedel, Schultz Bipontinus (Compositae), Schrenk, C. J. Maximowicz, G. Radde.

St. Vincent. See BORY de St. VINCENT.

Sallé, Charles. See SAUNDERS, W. W., 1874.

Salmon, Ernest Stanley. Britain, 1899. 23.

Salter, Dr. Thomas Bell. Britain (*Rubi*), 1846–56.

Salvin, Osbert. Central America, 1860–74. 412, etc.

Salwey, Rev. Thomas. Britain, 1833–59.

Salzmann, Philipp. Brazil (Hb. Benth.), 1854. —.

Sampson, G. Theophilus. China, Formosa, 1864–93. 142, etc.

Samson, John. Venezuela, 1887.

Sandberg, John H. Idaho, 1897. 844.

Sander & Co. (Cult. and wild Orchids.) 1881–99. 394.

Sanderson, John. Natal, 1864–77. 171, etc.

Sanderson, J., and others, per J. M. Wood. Cape, 1887. 91 (Orchids).

Sanford, Henry A. Australia, 1859 ? 80.

Sanio, Dr. Karl. Europe, 1876–80. 64.

Sargent, Charles Sprague. Florida, 1881–98. 187, etc.

Sartorius, Carl. Mexico, 1860 ?

Sartwell, Henry Parker. North America (*Carex*), 1842–51.

Saulcy, Louis Félicien Joseph Caignart de, and — **Michon.** Syria.

Saunders, James. Britain (*Chara*), 1883–88. 29.

Saunders, Mrs. Katherine. Natal, etc., 1881–99. 426.

Saunders, William Wilson. 1843–82. Herb., incl. Botteri, Sallé, Lt.-Col. Horsley (Travancore), Wallace (Ind. Arch.), Hillfield Herb. 271.

Savatier, Dr. Ludovic. South America, 1886.

Sawkins, —. India, 1873. 20.

Schaerer, Ludwig Emanuel. Europe (Lichens ; fasc. 1–26), 1826–34.

Schaffner, S. Wilhelm. Mexico, 1857–81. 1204. (Ferns, per Mettenius).

Schauer, Johann Conrad. 1834–37.

Scheffer, Rudolph H. C. C. Ind. Archip., 1870–78. 307, etc.

Schell, —. Honduras, 1875.

Schetelig, A. Formosa, 1868.

Schiede, Christian Julius Wilhelm, and **F. Deppe.** Mexico.

Schimper, Wilhelm Philipp. Terr. Azow., Abyssinia, Europe, Nubia, 1838–80. Herb. 5478 ; ex HOHENACKER, 1863. 1575.

Schinz, Hans. 1888–99. Zambesi, Somaliland, South Africa, Madagascar. 911.

Schläfli, Dr. Bagdad, Mauritius, Persia, 1863–65. 131.

Schlechter, Friedrich Reichardt Rudolf. Natal, etc., 1896–99. 2711.

Schlim, Louis. Columbia, 1854. 878.

Schmid, Dr. Bernhard. Nilghiri, 1891. 942 (Herb.).

Schmidt, —. *See* HAAGE and SCHMIDT; HOLL, F., and S. (Fungi).

Schmidtz, Dr. Fr. (per Reichenbach), 1865.

Schomburgk, Sir Richard. 1869–84. Australia, New Caledonia, Polynesia, 874.

Schomburgk, Sir Robert Hermann. 1836–64, 1872. St. Domingo, British Guiana, Aden, Malaya, Siam. 3568, etc.

Schousboe, Peter Kofod Anker. Marocco, 1872, 1883. 927.

Schott, Heinrich Wilhelm. Transsylvania, 1843–56.

Schrenk, Alexander. Soongaria, 1866–70. 900.

Schroeder, John Henry William, Baron von. (Cult. Orchids, types of Reichenbach), 1891–96. 36.

Schubert, C. *See* REICHENBACH, H.G.L., and C.S.

Schultz, Fred. Australia, 1870–71. 573, etc.

Schultz [Bipontinus], **Carl Heinrich.** 1842–63.

Schur, Philipp Johann Ferdinand. Transsylvania, 1878. 590.

Schweinfurth, Georg. 1867–97. Egypt, Nileland, Arabia, Socotra, Abyssinia. 3913.

Schweinitz, Lewis de. North America (Fungi), 1823–28. 800.

Scoresby, William, junior. Greenland, 1822.

Scortechini, Rev. Benedict. Malaya. 1886–87. 269.

Scott, Consul Benjamin Charles George. China. 1885.

Scott, John. India, 1870.

Scott, W. Lawrence. Nyassa, 1888. 582.

Scott Elliot, G. F. *See* ELLIOT, G. F. S.

Scouler, Dr. John. North America, 1823–52.

Scribner, F. L. *See* LAMSON-SCRIBNER, F.

Scully, J. Nepal, 1880. 256.

Scully, Reginald William. Ireland, 1889-90. 45.

Scully, W. C. South Africa, 1887–88. 85.

Seemann, Berthold Carl. "Herald" Voyage, 1867. 152.

Seler, E. Mexico, 1898. 133.

Sellow, Friedrich. Brazil, 1840?

Selwyn, Capt. Jasper Henry. Tropical Africa, 1855.

Sendtner, Otto. Bosnia, 1847.

Sharpe, —. *See* GILBERT and SHARPE.

Sharpe, Alfred. Nyassaland, 1897. 3 boxes.

Shaw, Henry. St. Louis, 1855. 30 (*Agave*).

Shaw, Dr. John. Cape. 1869–75. 396.

Shaw, Dr. Thomas. Barbary, 1880. (In Herb. Goodenough).

Shearer, Dr. George. China, 1875. 602.

Shepherd, Henry (per). 1826–44.

Shepherd, McCraes. New Zealand, 1852 ? 14.

Sherring, Richard Vowell. West Indies, 1886–90. 4415. *See also* NOCK, and R. V. S.

Short, Charles Wilkins. North America, 1832–45.

Short, Thomas Kier. Australia, 1838 ?

Shuter, James. Madras, 1824.

Shuttleworth, Robert James. 1831–46 ; dupl. ex Herb. Moggridge.

Shuttleworth, Mrs. Columbia. 1886.

Shuttleworth, Carder & Co. (per). Andes, 1889. 110.

Sieber, Franz Xavier. Australia, West Indies, Mauritius, Orient, Europe, 1835 ; Iter alp. delphin., 1899. 172.

Siehe, W. Asia Minor, Cappadocia, 1899. 1176.

Siler, A. L. Utah, 1873–74. 72.

Sim, John. Britain, 1845–74.

Sim, Robert. Fern Herb., 1885.

Sim, Thomas Robertson. South Africa, 1890–94. 549.

Simons, C. J. India, 1854. c. 500 ?

Sims, John. General Herb., before 1854.

Sinai Survey. *See* JAMES, Sir H.

Sinclair, Dr. Andrew. South America, New Zealand, 1836–61.

Sinclair, Mrs. Sandwich Islands, 1885. 52.

Singapore, Botanic Garden. 1882. 53.

Sintenis, Paul. 1884–99. Armenia, Asia Minor, Troad, Porto Rico. 6008.

Sintenis, P., and G. Rigo. Cyprus, 1881. 986.

Sintenis, P. *See also* **Bornmueller, J., and P. S.**

Sintenis, "fratres." Dobrudscha, 1874. 564.

Skeete, E. L. Barbadoes, 1895.

Skinner, George Ure. Honduras, 1836–57, 1884. 104.

Skinner, W. J. Damaraland, 1899.

Slade, Lieut. Edmond John Warre. Hamish Island, Red Sea, 1882. 21.

Smiles, F. H. North Siam, 1894. 116.

Smith, Andrew. Cape. 1891.

Smith, Mrs Anna Maria. Fiume, Firol, 1871–73. 146.

Smith, Benjamin Leigh. Spitzbergen, 1871. 18.

Smith, Sir Cecil Clementi (per). Perak, 1881–88.

Smith, C. S. Zanzibar, 1892–93. 128.

Smith, Christian. West Africa (ex Herb. R. Brown).

Smith, Colin. Britain, 1829–53.

Smith, F. (?) British Honduras. 1891. 15.

Smith, George W. Grenada, West Indies, 1891–93. 130.

Smith, Rev. Gerard Edwards. Britain, 1831-57.

Smith, Herbert H. St. Vincent, 1891. 30.

Smith, H. H., and George W. Smith. St. Vincent, Martinca, 1889–90. 3373.

Smith, Jared G. North America, 1898. 170.

Smith, John Donnell. Guatemala, 1889–99. 3226.

Smith, Robert. Mexico. 1840.

Smith, Mrs. Walter G. *See* SMITH, Mrs. ANNA MARIA.

Smith, Mrs. Walter G. [Anna Maria], & Pittoni. Graz and Fiume, 1870. 88.

Smith, Worthington George. Britain (Fungi), 1873.

Sodiro, Rev. Luis. Ecuador, 1876–87. 865 (Ferns).

Sonder, Otto Wilhelm. Cape, 1846–65.

Soulié, J. A. Tibet, 1896. 660.

Soyaux, Herman. Loango, Tropical Africa, 1875–82. 552.

Spanoghe, J. B. Java (Mosses), 1834–36.

Spratt, —. Punjaub, 1873.

Spencer, Comr. Nelson Grantley. South Chili, 1871. 105 (Crypt.).

Spicer, Rev. William Webb. Tasmania, 1882.

Sprague, Thomas Archibald. Colombia, 1899. "Collection," c. 500.

Sprengel, Anton (per). 1828–38.

Spruce, Richard. Brazil, Peru, Ecuador, 1839–92, 9931 ; incl. North Brazil, 1–4400 ; East Peru, Tarapota, n. 4401–4950 ; Tarapota and Ecuador, n. 4951–5000 ; Ecuador, 5001-6533 ; ex Herb. Bentham (1st set).

Stainbank, Mrs. Transvaal, 1886. 37.

Staines, Frederick. Mexico, 1844–59.

Stanger, William. Cape, 1854 —?

Stapf, Otto. South-East Europe, Persia, 1884–92. 999, incl. Austro-Hungary, 800 ; Persia, 178 ; *Ephedra*, 21.

Staples, —. Mexico, 1833.

Stark, M. Y. Canada, 1841.

Starr, Miss. Japan. 1862.

Staudt, F. West Africa, 1898. 400.

Staunton, Sir George Leonard. 1879. China, ex Herb. R. Brown.

Stead, —. Sind, 1877. 101.

Steere, Prof. —. (per J. MICHIGAN). Peru, Ins. Philipp. 1876. 170 (Ferns).

Steere, Rt. Rev. Bishop Edward. Nyassa, 1878.

Steetz, Joachim. 1846–47.

Stephani, Franz (per). Europe (Hepaticae), 1885–97. 67.

Stephenson, —. (per W. W. SAUNDERS). New Zealand, 1882.

Sternberg, Caspar, Graf. Europe (*Saxifraga*), 1829–31.

Steudel, Dr. Ernst Gottlieb. *See* HOCHSTETTER and E. G. S.

Steudner, H. Abyssinia, 1890–92. 444.

Steven, Chrétien de (per). Russia, 1829–38.

Stewart, Rev. Dr. Zambesia, 1868–72. 133.

Stewart, John Lindsay. India, 1864–72. 212.

Stewart, Samuel A. Ireland, 1875.

Stock, Daniel. Britain, 1831.

Stockholm Museum (per). 1872–91. Greenland, Spitzbergen, Sweden, Yenesei. 545.

Stocks, John Ellerton. Sind, 1847–54. 670.

Storck, Jacob P. Fiji, 1881–83. 28.

Stokes, J. Lort. Australia, 1846–53.

Strachey, Gen. Sir Richard, and **J. E. Winterbottom.** West Himalaya, 1850. c. 3300.

Strangways, The Right Hon. William Thomas Horner Fox, 4th Earl of Ilchester. Britain, 1830–55.

Stříbrný, V. Bulgaria, 1894–98. 368, incl. cent. i.–iii.

Stubendorff, — von. Temperate Asia, 1863.

Stuhlmann, Franz, and others. Tropical Africa, 1897. 471.

Sturm, Dr. Johann Wilhelm. Europe, 1854–58.

Sturt, Capt. Charles. Australia, 1833–58.

Sulivan, H. N. Yenesei, 1888.

Sulivan, I. B. Falkland Islands, 1842–52.

Sumichrast, Prof. —. Mexico, 1866. 101.

Suringar, Willem Frederik Reinier (per). Malaya, 1857–63. 1896.

Sutherland, Peter Cormack. Natal, 1831–73.

Swainson, William. 1830–42.

Swartz, Olof. (Mosses). 1811 — ?

Swinhoe, Robert. China, Formosa, 1863–89. 306, etc.

Sydow, Paul. Europe (Fungi), 1884–89. 3000. (Mycotheca marchica, cent. 1–28=2800 ; Uredineae, fasc. 1–4=200).

Syme, George. Jamaica, 1882–84.

Syme, John Thomas Irvine Boswell. *See* BOSWELL, J. T. J.

Szowits, O. I., and — **Wiedemann,** Russia, 1885. 422.

Tainturier des Essarts, L. F. New Orleans, 1824–36.

Talbent, G. W. H. Punjaub, 1870.

Talbot, William Alexander. Canara, etc., 1882–95. 421.

Talbot, William Henry Fox. Ionian Islands, 1832–59.

Tanner, Col. Henry Charles Baskerville. Gilgit, 1881. 68

Tate, Dr. George Ralph. South China, 1864. c. 400.

Tate, Ralph. Nicaragua, Australia, 1868–84. 1617.

Tatum, E. J. Britain, 1891.

Taubert, Paul. Cyrenia, 1888. 273.

Tayler, J. W. Davis Strait, 1869. 29.

Taylor, Alexander Smith. California, 1855–59.

Taylor, Charles A. Mogador, 1881.

Taylor, Miss K. Orange Free State, 1898.

Taylor, Mary. Jamaica, 1882. 22.

Taylor, Thomas. Ireland (Crypt.), 1832–47.

Telfair, Charles. Mauritius, 1825–32.

Temple, R. Honduras, 1856–65.

Templeton, Robert. Ireland, 1831–32.

Tenore, Michele. Italy, 1823–40.

Teutsche & Co. Japan, 1872.

Teysman, Johannes Elias. Malaya.

Thering, Dr. von. Brazil, 1887. 14.

Thierry, —. Senegal, 1865. 97.

Thom, Dr. G. Cape, 1824–27, nn. 850–1032; 1034-1357.

Thomas, Emanuel. Switzerland, 1842-43.

Thomas, L. D. Madras, 1844.

Thompson, Richard Horatio Ely. (Ex Herb. Brandis). Oude, 1873. 542.

Thomson, Alexander. Java, 1847–62.

Thomson, Dr. Britain, Devonshire, 1870.

Thomson, G. Cameroons, 1875. 30.

Thomson, Gideon. Madras, 1854.

Thomson, Joseph. Nyassa, Marocco, 1880–88. 536.

Thomson, Robert. Jamaica, Venezuela, 1868–79.

Thomson, Dr. Thomas. India, Aden, 1845–72. 1503. *See also* HOOKER, Sir J. D. and T. T.

Thomson, Rev. William C. Old Calabar, 1863.

Thornhill, John. Britain (Mosses), 1837–52.

Thorold, Dr. William Grant. Tibet, 1892.

Thouars. *See* DU PETIT THOUARS, L.M.A.

Thozet, —. New Caledonia, Australia, 1870–76.

Threlfall, William. Persia, 1889.

Thrupp, J. Godfrey. *See* JAMES, F. L., and J. G. T.

Thuemen, Felix, Baron von. Europe (Fungi), 1875–84. 4600, incl. Mycotheca universalis, cent. 1–23=2300; Australian Fungi, 1300.

Thurber, George. Mexico, California, 1854–57.

Thurston, Sir John Bates. Solomon Islands, Fiji, 1884–94. 31.

Thwaites, George Henry Kendrick. Ceylon, 1846–76. n. 1–3886, and 620.

Tillson, Arthur G. Antigua, 1890–93. 46.

Tisdall, —. Australia (Fungi).

Tiselius, Gustaf. Sweden (*Potamogeton*), 1895–97. fasc. 1–3. 150.

Todaro, Agostino. Italy, 1861.

Todd, C. C. Canada, 1826.

Tolmie, William Fraser. North America, 1832–56.

Tommasini, Muzio, with **Noe** and others. Istria, 1850 ? n. 115–350.

Tonduz, Ad., and **H. F. Pittier de Fabrega.** Costa Rica, 1899. 200.

Torrey, Dr. John. North America, 1824–57.

Towgood, Miss. Australia, New Zealand, ex Herb. Moggridge, 1878.

Townsend, David. North America, 1833–34. 700.

Townsend, Frederick. Switzerland, Britain, 1880–88.

Tozer, Rev. John S. Britain, 1828–30.

Trail, James William Helenus. Amazons (1646, etc.). Britain (1674, etc.), 1874–94. 3320, etc.

Trask, Mrs. Blanche. Sta. Catherina, California, 1898. 202.

Travers, William Thomas Locke. New Zealand, 1860-80.

Trelease, William. Azores, 1897. 148.

Treub, Melchior. Java, Japan, 1891–97. 308.

Treutler, Dr. William John. Himalaya, 1875. 1276.

Trevelyan, Sir Walter Calverley. Faroe Islands, Europe, etc., 1831–65, 1880. 1504 (incl. Wormskiold, Rink, N. J. Winch, Horneman, and Beverley).

Treviranus, Christian Ludolf. Europe, 1823–55.

Trevisan, Vittore. Italy, 1874. 268 (Lichenotheca veneta, fasc. 1–14).

Triana, José Jeronimo. Columbia, 1854–92. 2408.

Trimen, Henry. Ceylon, 1882–95. 162.

Tuck, William, and **Mrs. Barber.** Cape, 1873. 33.

Tuckerman, Edward. North America, 1841–65. (Lich. Am. Sept., fasc. 1–4).

Tuerckheim, Baron H. de. Guatemala, 1879–89. 768.

Turczaninow, Nicolas Stevanovitch. Baical, 1833–42.

Turner, William. Columbia, 1830–45.

Tweedie, John. Buenos Ayres, 1832-49.

Tyson, William. Cape, 1881–90. 572.

Ule, Dr. Ernesto. Old Calabar, 1899. 65.

Underwood, Lucien Marcus. Florida, 1891–99. 140.

Unio itinerarià. 1843–44. Incl. Kotschy, Nubia, 350 : Welwitsch, Portugal, 300 ; Abyssinia, 650.

United States Herbarium. *See* WASHINGTON.

Urban, Ignaz (per). Argentina, Chili, West Indies, Tropical Africa, 1892-99. 260.

Urquhart, Lt. Col. Francis Gregor. Hong Kong, (Ferns) 1860.

Vachell, Rev. G. H. Lappas Island, China, 1837.

Vandas, Dr. Karl. Bosnia, 1895. 250.

Vasey, Dr. George. North America, California, 1882–92. 573.

Vasey, Dr. G., and C. G. Pringle. Texas, North America, California, 1883. 598.

Vatke, Wilhelm, (per). Angola, Madagascar, 1884.

Vauthier, —. Brazil, 1837.

Veesenmeyer, Gustavus, (per Hohenacker). Reg. Casp., 1838 120.

"Vega" Expedition, (per Wittrock). Greenland, Siberia, 1884. 303.

Veitch, Harry James. General Herb., 1884. Malaya, etc., 1886–98 (incl. Burke, C. Curtis, J. G. Veitch, Lobb).

Veitch, Herbert. (Cult. Orchids) 1886. 398.

Veitch, James. 1840–63.

Veitch, James Herbert. Corea, West Australia, 1886–93. c. 598.

Veitch, John Gould. Polynesia, Australia, 1867–98. 245.

Veitch, P. C. M. South Africa, 1884.

Verreaux, —. Australia, Guiana, 1880. 698.

Vestergren, —. 1899 (Micromycetes rar., fasc. 1–10). 250.

Vidal y Soler, Sebastian. Philippines, 1883–86. 4063.

Vieillard, Eugène. Bourbon, Cape, New Caledonia, New Ireland, 1864. n. 2192.

Vienna University, (per Kerner). Austria-Hungary, fasc. 9–16, in exchange, 1887. 800.

Villet, M. Cape, 1837.

Vize, Rev. John Edward. Britain (Fungi), 1878–88. Cent. 1–6. 600.

Vogel, Theodor. Niger, 1843. 150.

Voigt, Rachel S. India, 1846.

Volkens, G. Kilimanjaro, 1895. 754.

Vriese, Willem Hendrik de. *See* DE VRIESE, W. H.

Vuylsteke, Charles. (Cult. Orchids.)

Waby, John F. Barbadoes, 1895. 136.

Wagener, H. Venezuela, 1848-49.

Wagstaffe, W. W. Spitzbergen, 1864. 53.

Wahlstedt, Lars Johann. *See* NEUMANN, WAHLSTEDT and MURBECK, and NORDSTEDT and WAHLSTEDT.

Wainio, Dr. Edward. Brazil, 1892. 500.

Waite, Merton B. North America, 1892.

Wakefield, Rev. Thomas. Mombasa, etc., 1876–84. 508.

Wakefield, W. New Zealand, 1864.

Walker, Miss A. F. Australia 1894. (Fungi.)

Walker, Mrs. A. W., (née **Paton**). Ceylon (Mosses), 1829–42.

Walker, Lt. Col. George Warren. Ceylon, 1830–37. c. 1100.

Wall, George. Ceylon (Ferns), 1871–87. 93.

Wallace, Alfred Russel. Brazil, Indian Archipelago, 1868–74. 97, etc.

Waller, Horace. Zambesi, 1864.

Wallich, Nathaniel. India, 1823–54.

Wallis Gustav. Philippines, Columbia, Timor, 1881–84. 160.

Walsh, James Joseph. West Indies, 1889. 143.

Warburg, Dr. Otto. 1895.

Ward, G. H. Spain, 1843.

Ward, Harry Marshall. Britain, 1896.

Ward, Nathaniel Bagshaw. Britain, etc., 1836–63.

Warion, A. Algeria, 1873–78. 624.

Warming, Johannes Eugen Bülow. Brazil, 1871–82. 104.

Warnstorf, Carl. 1889. ——

Warpur, —. Madagascar, 1899. 42.

Warren, Mrs. "Elizabeth Andrew." Europe, 1834–58.

Warszewicz, A. Joseph. South America, 1846–51.

Washington, U.S. Department of Agriculture. West Indies, North America, Mexico, Sandwich Islands, 1871–78. 531. Incl. C. Wright, and C. C. Parry.

Waterfield, W. Europe, South Africa, 1874–76.

Waterhouse, —. Australia, 1861–64.

Waters, James. Jamaica, 1825–50.

Watson, Gavin. North America, 1849–55.

Watson, Hewett Cottrell. Britain, 1830–52; 1881 (Herb.)

Watson, M. E. Uruguay, 1890. 50 Grasses.

Watson, Sereno. 1879–91. Florida, California, Guatemala, Mexico. 285.

Watson, William. Brazil, 1891.

Watt, David A. P. Canada, 1869–73. 30.

Watt, George. India, 1880–98. 500 and some cases.

Watters, Thomas. Formosa, Corea, 1882–88. 105.

Watts, Edward. Bolivia, 1829–32.

Watts-Jones, Lieut. William Alan. Yunnan, 1899. 23.

Weatherdon, J. H. *See* PATIN. 1898.

Webb, Frederick Morgan. Britain, 1875.

Webb, Philip Barker. 1834–54. (Ex Herb.)

Webster, Rev. James. Moukden, 1886. 459.

Weir, John. St. Paul, Rio, Tasmania, 1863. 1265.

Weir, Mrs. Sarah. South America and South Africa, 1898. (12 sets.)

Wellby, Capt. Montagu Sinclair. Sobat and Nile, 1899. 2 parcels, etc.

Wellby, Capt. M. S., and Lieut. — Malcolm. Tibet, 1897.

Welwitsch, Friedrich Johann Martin. 1840–83. Portugal, Angola. 3169. *See also* UNIO ITINERARIA.

Wendland, Hermann. Central America, 1859–94.

Wenyon, Dr. Charles. China, 1887–94. 161.

Westendorp, —. Belgium (Crypt.), 1877–79. 1302. (Fasc. 1–6, 8–17, 19–28.)

Westland, —. Lantas district, 1886. 12.

Wetherell, James. Brazil, 1850–58.

Wettstein, Richard, Ritter von Westersheim. Austria-Hungary. Fl. exs. fasc., 17–32. 1600. *See also* KERNER; VIENNA.

Weymouth, W. A. Tasmania (Mosses), 1890–91. 91.

Wharton, G. Jamaica, 1842–56.

Wharton, Adml. Sir William James Lloyd, and others (per). Solomon Islands, 1894–95. 107.

White, H. P. Marocco, 1886.

White, Robert B. Columbia, Ecuador, 1868–96. 95, etc.

Whitelay, —. Japan, 1865. c. 20.

Whitfield, T. Sierra Leone, 1848.

Whitehead, Rev. Henry. St. Helena, 1878.

Whitla, Francis. Ireland, 1838–48.

Whitmee, Rev. S. J. Samoa, 1875–78. 659.

Whittall, E. Smyrna, 1889–96. 646, etc.

Whitwell, William, Britain, 1891.

Whymper, Edward. Andes, etc., 1899.

Whyte, Alexander. Milanji, Nyassa, 1893–99. 336 and 15 cases.

Whyte, A., and **J. McClounie.** Zomba and Milanji, 1896. 78.

Wiedemann, —. Anatolia, 1863-77. 319, etc. *See also* SZOWITS and W.

Wigan, F. (Orchids.) 1892.

Wiggins, Capt. Joseph. Siberia, 1877. 27.

Wight, Dr. Robert. India, 1826–54; Herb., 1864–71. About 9000.

Wilding, —, and **H. C. Hart.** Arctic regions, 1877. 125.

Wilford, Charles. China, Formosa, Manchuria, Japan, 1857, Incl. Hong Kong, nn. 1–435; Pratos Island, n. 435–455; Amoy, n. 455–460; Formosa, n. 460–561 (but the numbers reach 1212); Manchuria, 163; Hakodato, 166; Chusan and Port Hamilton, 125.

Wilhelmi, Carl. Australia, 1855–63.

Wilkes Expedition, 1866–85. 201 per A. Gray, and U.S. Dept. Agriculture. *See also* WRIGHT, C.

Williams, C. H. Brazil, 1863–65.

Williams, Frederic Newton. Britain, 1884.

Williams, J. A. Nyassa, 1892.

Willis, John Christopher. Ceylon, 1899.

Willits, E. (per U.S. Dept. Agric.). Florida, Mexico, Galapagos, 1892. 221.

Willkomm, Moritz. Spain, 1849–63. c. 1000. Incl. 1st Coll. det. Kunze, 116 ; 2nd do., 300.

Wilms, Dr. Fr. Travancore, 1895, 500 ; South Africa, 1898, 692.

Wilson, Rev. Charles Thomas. Victoria, Nyanza, 1880. 148.

Wilson, George Ferguson. 1852–63. (Museum specimens.)

Wilson, John Bracebridge. Australia (Algae), 1886–88. 795.

Wilson, Nathaniel. (Ferns.) 1847–62.

Wilson, W. Jamaica, 1864. 17.

Wilson, William. Britain, 1827–65 ; (et ex Herb. 100) 1879.

Wimmer, Friedrich. Europe (*Salix*), 1873. 164.

Winch, Nathaniel John. Europe, 1830–38 ; 1867. 115, etc. *See also* TREVELYAN.

Winslow, Dr. A. P. Sweden, 1880–87. 12.

Winter, Dr. Georg. Europe (Fungi), 1888. 200.

Winterbottom, James Edward. India. (*See* STRACHEY, Gen. Sir R., and J. E. W.

Wislizenus, Dr. A. North Mexico. 1850 ?

Withering, William. Britain (Lichens), 1873 (from the Linnean Society). 500.

Wittrock, Veit Brecher. Europe (*Erythraea*, 52 ; Algae, 150), 1884–91. 202. *See also* " VEGA " Expedition.

Wittrock, V. B., and C. F. O. Nordstedt. Europe (Algae, fasc. 1–29), 1877–95. 1450.

Wollaston, T. Vernon. St. Helena, 1877.

Wolley-Dod, Major Anthony Hurt. Cape, 1898–99. 2009.

Wolley-Dod, Rev. Charles. Portugal, 1886. 13 *Narcissus*, etc.

Woloszczak, Dr. Eustache. Flora polonica, cent. vi., vii., 1897–98. 200.

Wood, Capt. —. Galapagos (Ferns), 1854. 44.

Wood, Dr. Charles Bedingfield. British Columbia, Australia, 1864. 180, etc.

Wood, John Bland. Britain, 1841–43.

Wood, John Medley. Natal, 1878–99. 4030.

Woodrow, George Marshall. Bombay, 1873–99. 360.

Woods, Joseph. Europe, 1835–53.

Wooton, Elmer O. New Mexico, 1898. 574.

Wormskiold, Lieut. —. Lapland, Norway, 1867. 30. *See* TREVELYAN.

Worsley, Arthington. South Brazil, 1899. 30.

Wray, Leonard. 1850–61.

Wray, Leonard, junior. Perak, Malaya, 1884–95. 452.

Wray, Dr. Thomas P. Georgia, 1831–35.

Wright, —. (per H. CHRISTY). Falkland Islands.

Wright, Dr. India, 1863.

Wright, A. J. New Zealand, 1868. 64 (Ferns and Algae).

Wright, Charles. 1857–65, 1873, 1893. Texas, Cuba, Japan, Arctic America. c. 5000. Incl. West Texas, n. 77–565 (1–76 wanting in Herb. Benth.). Japan, Wilkes Am. Exped., ex A. Gray, 300; do. Rodgers Exped., 200; Cuba, 90; do. (1865), 1642; (1867–68), 973; do. (1871), 394; Arctic regions, Wilkes Exped. (1865), 320; Cape, 533; Nicaragua, 20.

Wright, Edward Perceval. Seychelles, 1871. 81.

Wright, W. G. California, 1880–84. 18.

Wullschlaegel, H. R. West Indies, 1847.

Wunderlich, —. Temperate Asia, 1863.

Wyatt, Claude Wilmot. Columbia, 1870.

Wynne, Mrs. Syria, 1864.

Wyse, Winifrede M. Greece, 1855.

Yeoward, Daniel. Fiji, 1894–95. n. 1–103.

Yorke, Mrs. Britain, 1892.

Yorke, Henry Frederick R. South Africa, 1893–94. 73.

Young, Dr. James Forbes. Britain (Herb.), 1860

Young, R. (Cult. Orchids), 1891.

Zahlbruckner, Alexander. Austria-Hungary, 1899. Cent. iv. 100.

Zahn, —. Panama, 1887. c. 140.

Zeiller, R. Perak, 1885.

Zenker, G. Cameroons, 1897. 838.

Zeyher, Carl Ludwig Philipp. South Africa, 1840–51; 1865. n. 1–1891, ex Herb. Benth., some wanting; Herb. Parker, 1869.

Zohrab, James. Asia Minor, Arabia, 1852–59; 1881. 1301, etc. *See also* CALVERT and ZOHRAB.

Zollinger, Heinrich. Java, 1848–65. 330; also n. 1–1090; ex Herb. Bentham, with some numbers absent.

Zuccarini, Joseph Gerhard. Greece, 1837–39. 550.

Zuck, Miss Myrtle, afterwards **Mrs. Walter Rough.** Hong Kong, 1899. 103.

GEOGRAPHICAL DISTRIBUTION.

NOTE.—The contents of general or special herbaria or voyages are not given in the following tabulation, nor are the following arctic and antarctic collectors:—Belcher, Besel, Czekanowski, Nordenskjöld, Parry, E., Ross, J. C., Wilding and Hart.

1.—EUROPE. SECTION 1.—GREAT BRITAIN AND IRELAND.

Aitchison, Anderson, W., Andrews, W., Babington, C. C., Backhouse, Bagnall, Baker, E. J., Balfour, J. H., Ball, A. E., Banks, G., Barry, Baxter, W., Beeby, Bennett, Ar., Bennett, E. T., Bloomfield, Bloxam, Bohler, Boswell, Bot. Exch. Club., Bot. Record Club, Bowman, J. E., Bowman, R. B., Braithwaite, Brand, Bree, Briggs, T. R. A., Britten, Bromfield, Brooks, Broome, Brotherston, Brown, W., Burkill, Carbonell, W. C., Carlyle, Carmichael, Carrington, Carroll, Christy, A. E., Christy, H., Christy, R. M., Christy, W., Clarke, J., Craig-Christie, Croall, Crombie, Cruckshanks, Curnow, Davies, Deakin, De Crespigny, Dennes, Dent, Dewar, Dickie, Dresser, Duthie, Eaton, Edmonston, Edwards, W., Ferguson, Fisher, Fitt, Foggett, Foot, Forster, E., Francis, Fraser, J., Fryer, Gardiner, Gibson, G. S., Gibson, R. J. H., Gissing, Glover, T., Gourlie, Greville, Griffith, J. E., Griffiths, Groves, H. and J., Groves, J., Harvey, Hassall, Henslow, Hiern, Hinds, A., Hobkirk, Hobson, Holmes, Hooker, W. J., Hore, Hunt, Ibbotson, Jackson, Jenner, Johns, Johnston, Dr. H. H., Joshua, Kirkby, Landsborough, Leefe, Levinge, Lindberg, S. O., Lindsay, Linton, E. F., Linton, W. R., Lister, A., Lloyd, Luscombe, McCalla, Mackay, McNab, J., Mansell-Pleydell, Marshall, Massee, Masters, Mathews, W., Melvill, J. C., Merrifield, Mill, Mitten, Moggridge, M., Molesworth, Moore, D., Moore, T. T. T., Parnell, Pearson and Carrington, Phillips, W., Plowright, Powell, T. J., Preston, Purchas, Purton, Ralfs, Reeves, W. W., Roper, Salmon, Salter, Salway, Saunders, J., Scully, R. W., Sim, J., Smith, Col., Smith, G. E., Smith, W. G., Stewart, S. A., Stock, Strangways, Tatum, Taylor, T., Templeton, Thomson, Dr., Thornhill, Townsend, F., Tozer, Trail, Vize, Watson, H. C., Webb, F. M., Whitla, Whitwell, Williams, F. N., Wilson, W., Withering, Wood, J. B., Yorke, Mrs., Young.

1.—EUROPE. SECTION 2.—EXCLUSIVE OF THE UNITED KINGDOM.

Adamović, Andersson, Anzi, Archangeli, Areschoug, Árnasa, Arnold, Baenitz, Baker, G. P., Baker, J. G., Baldacci, Ball, J., Barcelo y Combis, Beck, G., Becker, Bennett, A. W., Besser, Biasoletti, Bicknell, Blytt, Boissier, Bornet, Borrer, Borszczow, Borzi, Botteri, Bourgeau, Braun, A., Braun, G., Brébisson,

Bresadola, Briosi and Cavara, Brotherus, Butler, Cardot, Caruel, Caspary, Christ, Churchill, Cooke, M. C., Crépin, Dahlstedt, De Toni and Levi-Morenos, Desmazières, Dufour, Durieu de Maisonneuve, Dusén and Kidston, Duthie, Duval-Jouve, Dyer, Eaton, A. E., Ekstam, Elliot, G. F. S., Endress, Favrat and Barbey, Fellmann, Field, B., Fischer, Flahault, Focke, Forsyth Major, Freeman, Friderichsen and Gelert, Fries, E. M., Fries, T. M., Gadeceau, Gandoger, Garovaglio, Grisebach, Groves, H., Guadagna, Gussone, Hackel, Hamilton, W., Hanbury and Oliver, Hartman, C., Haussknecht, Heer, Heer and Brügger, Heldreich, Henriques, Hitsch, Holl and Schmidt, Hooker, J. D., Hoppe, Hore, Horneman, Huet du Pavillon, Huguenin, Huntingdon, Husnot, Huter, Jaeggi, Janka, Joad, Johnson, G., Jordan, Kanitz, Karsten, H., Kaurin, Kerner, Kiær, Kiærskou, Kneucker, Koch, Kotschy, Lacaita, Lange, Larbalestier, Leighton, Leskowatz, Levi-Morenos, Libert, Lindberg, S. O., Lindeberg, Loder, Lojacono, Lojka, Mabille, Malmberg, Markham, A. H., Martens, Massalongo, Maw, Milde, Milno, J., Moggridge, J. T., Montagne, Motelay, Mougeot, Mougeot and Nestler, Munro, W., Murray, R. P., Naegeli, Neuman, Neuman, Wahlstedt and Murbeck, Nicholson, G., Nicholson, J., Nordstedt and Wahlstedt, Oliver, D., Orphanides, Oudeman, Paget, Painter, Paiva, Pančić, Parlatore, Parlovic, Pazschke, Pichler, Pike, A., Piré, Porta and Rigo, Prescott, Rabenhorst, Rabenhorst and Gottsche, Raddi, Rehm, Rehmann, Reichenbach, H. G., Reichenbach and Schubert, Requien, Reverchon, Rostowzew, Roumeguère, Roumeguère and Dupray, Ruprecht, Saccardo, Sagonski, Sanio, Schaerer, Schimper, Schott, Schur, Sendtner, Sieber, Sintenis fratt., Sintenis and Rigo, Smith, A. M., Smith, B. L., Smith, W. G., Smith and Pittoni, Stapf, Stephani, Steven, Stříbrný, Sturm, Sydow, Talbot, W. H. F., Tenore, Thomas, E., Thuemen, Tiselius, Todaro, Tommasini, Townsend, F., Trevelyan, Treviranus, Trevisan, Vandas, Wagstaffe, Welwitsch, Westendorp, Wettstein, Willkomm, Wimmer, Winslow, Winter, Wittrock, Wittrock and Nordstedt, Wolley-Dod, C., Woods, Wormskiold, Wyse, Zuccarini.

2.—North Africa and Orient.

(*Madeira, Canaries, Azores, extra-tropical North Africa and Orient, including Beluchistan and Afghanistan, and Arabia south to tropic.*)

Alboff, Anderson, T., Appleton, Armitage, E., Arruda Furtado, Ascherson and Rohlfs, Baker, G. P., Balansa, Balfour, I. B., Ball, J., Barbey, Beccari, Becker, Beevor, Bell, F., Bishop, Blackmore, Blunt, Boissier, Bolle, Bornmueller, Bory, Bourgeau, Bromfield, Buhse, Bunge, Burton, Calvert, Calvert and Zohrab, Cardosa, Christ, Colvill, Cosson, Danford, Egerton, Ehrenberg, C. G., Elliott, E. A., Everett, W., Figari, Fischer, Floyer, Forbes, E., Forsyth Major, Fraser, P. N., Gaillardot, Garden, Glover, Goodrich, Grant, A. K., Hart, H. C., Haussknecht, Hay, Miss, Hay, J. H. D., Hohenacker, Hooker, J. D., Huet du Pavillon, Hunter, Major, Hurst, Hyslop, Ibrahim, Iliff, Jamin, Jefferies, Jennings, Capt., Johnson, W. P., Johnston, Dr. H. H., Karelin, Keck, Kotschy, Kralik,

Lace, Layard, Lefebre, Letourneux, Lippold, Lord, Lord and Bauermann, Lowe, Lowne, McLeay, Mandon, Marion, Mason, N. H., Mason, M., Maunsell, Milne, J., Mitchell, J. B., Moseley, Munby, Murray, R. P., Osborne, Paillardot, Paine, Paiva, Payton, Pelly, Percy, Péronin, Pichler, Pierce, Post, Pullen, Radde, Ramsay, Redhead, Rein and Fritzsch, Reuter, Rohlfs and Ascherson, Roth, Ruprecht, St. John, Saulcy and Michon, Schlaefli, Schousboe, Schweinfurth, Shaw, T., Sieber, Sintenis, P., Stapf, Szowits, Taubert, Taylor, C. A., Thomson, J., Threlfall, Trelease, Warion, White, H. P., Whittall, Wiedemann, Wynne, Zohrab.

3.—Northern Asia.

(*Central and Northern Asia, country north of India, Tibet and China, including Mandshuria and Saghalien.*)

Augustinowicz, Batalin, A., Bongard, David, Deasy, Fedtschenko, Fischer, Gamble, Hedin, Henderson, G., Heyde, Hobson, H. E., James, H. E. M., Karelin, Karelin and Kirilow, Karo, Kirilow, Ledebour, Lehmann, J. J. C., Littledale, Maack, Maximowicz, Middendorff, Picot, Potanin, Przewalsky, Radde, Regel, Rockhill, Rostowzew, Schimper, Schrenk, Soulié, Stubendorff, Steven, Sulivan, H. N., Szowits, Szowits and Wiedemann, Thorold, Turczaninow, Veesenmeyer, Webster, Wiggins, Wilford, Wunderlich.

4.—China and Japan.

(*China and Japan, Hainan, Formosa, Luchu Archipelago, Bonin Islands, Corea and Kurile Islands.*)

China.—Aldridge, Alcock, Alexander, W. T., Anderson, J., Baroni, E., Batalin, Beazley, Biondi, Birnie, Bourne, F. S. A., Bowring, Bowring, J. C., Brains, Bretschneider, Bullock, Bunting, Bushell, Callery, Cantor, Carles, Carpenter, Champion, Collingwood, Cooper, W. M., Cummins, Cuthill, Davenport, A., David, Delavay, Derry, Dickins, Dill, Everhard, Eyre, Faber, Forbes, Fortune, Gaudichaud, Giraldi, Godefroy-Lebeuf, Hance, Hancock, Harland, Harris, Hart, W. H., Henry, A., Henry, B. C., Hickin, Home, E., Hosie, Hugh, Jacob, James, H. E. M., Jameson, Col., Lace, Macarthy, Maingay, Maries, Matsumura, Maximowicz, Mesny, Millett, Miyabe, Mollendorff, Oldham, Perry, W. W., Phillips, G. W., Playfair, Potanin, Pratt, Reeves, J., Reid, Robinson, H., Ross, John, Sampson, Scott, B. C. G., Shearer, Staunton, Swinhoe, Tate, G. R., Watts-Jones, Wenyon, Westland, Wilford.

Japan.—Barrington, Bisset, Blomfield, Dickins, Faurie, Fortune, Hancock, Maack, Maingay, Maries, Maximowicz, Miquel, Moseley, Oldham, Robinson, H., Starr, Whiteley, Wilford, Wright, C.

Formosa.—Bourne, F. S. A., Gregory, W., Henry, A., Hosie, Maries, Murphy, Oldham, Playfair, Sampson, Schetelig, Swinhoe, Watters, Wilford.

Corea.—Carles, Oldham, Perry, W. W., Watters.

5.—India.

(*India, including Ceylon and Burma, the Malayan Peninsula to Singapore, Andaman, Nicobars, Laccadive and Maldive Islands, and Southern Tibet-watershed of the Indus and Brahmapootra.*)

Adam, Aitchison, Anderson, T., Aplin, Barr, Batcock, Beddome, Bélanger, Bell, E. D., Bellew, Birdwood, G. C. M., Black, A. A., Blenkworth, Boivin, Bourdillon, Bourne, G. A. C., Boxall, Brandis, Bulger, G. E., Cattell, Clarke, C. B., Cleghorn, Cochrane-Baillie, Collett, Collins, Conway, Cooke, T., Cuming, Dalzell, Davidson, De Crespigny, Foulkes, Frere, W. E., Gamble, Gardner, Gibb, Gibson, A., Giles, Glasgow and Ridley, Giles, Godwin-Austin, Grant, J. W., Griffith, W., Griffith and Helfer, Hallett, Hamilton, F., Hearles, Hearsey, Henderson, F., Henderson, G., Hervey, Hill, H. C., Hobson, Major, Hooker, J. D., Hope, Horsley, Hume, Hunter, Hunter-Weston, Hutchinson, Major, Huter, Jaeschke, Jameson, Jamieson, Jenkins, Jerdon, Jeyeteleki, Johnson, E., Johnstone, J. W., Keenan, King, G., Kurz, Lamington, Law, Lawson, Lépine, Levier, Lisboa, Lister, J. J., Lockwood, Macé, McIvor, Mack, Madden, Maingay, Mann, G., Maries, Montford, Mudd, Rev. —., Munro, J., Murray, J. A., Murton, Nairn, Neve, Nimmo, Nisbet, Norris, Oliver, J. W., Oxley, Parish, Peters, Dr., Pinwell, Prain, Pullen, Purwell, Radcliffe, Ramsay, Reynaud, Rottler, Royle, Rustler, Sawkins, Schmid, Scott, J., Scully, J., Shuter, Simons, Smith, C. C., Stead, Stewart, J. L., Stocks, Strachey and Winterbottom, Talbent, Talbot, W. A., Tanner, Thomas, L. D., Thompson, Thompson, G., Thomson, T., Thwaites, Trentier, Trimen, Voigt, Walker, A. W., Walker, G. W., Wall, Wallich, Watt, G., Wight, Willis, Wilms, Winterbottom, Woodrow, Mrs., Woodrow, G. M., Wright, Dr.

6.—Malaya.

(*Tonquin, Anam, Siam, Cambodia, Saigon, Malayan Islands including the Philippines, Keeling Islands, and New Guinea.*)

Balansa, Beccari, Binnendijk, Bosch, Brook, Burbidge, Burck, Butterworth, Callery, Cantley, Collett, Creagh, Cuming, Curtis, C., De Vriese. Everett, A. H., Fitzalan, Forbes, H. O., Fraser, M., Gaudichaud, Guilianetti, Guppy, Hallett, Hancock, Hasskarl, Haviland, Henshall, Hickson, Horsburgh, Horsfield, Hose, King, G., Koorders, La Savinière, Lauterbach, Lister, J. J., Lobb, T., Loher, Low, MacClelland, McGregor, Maclear, Meyer, A. B., Micholitz, Miquel, Motley, Murchison, Murton, Pierre, Pinwell, Prout, Raffles, Ridley, Riedel, Robinson, W. W., Scheffer, Schomburgk, Robs, Scortechini, Smiles, Spanoghe, Steere, Teysmann, Thomson, A., Treub, Veitch, H. J., Vidal, Wallace, Wallis, Wray, L., Zeiller, Zollinger.

7.—Australia.

(*Australia, including Tasmania and Lord Howe's Island.*)

Adamson, Anderson, J., Andrews, Archer, Ascherson, Babbage, Bailey, Baker, R. T., Bancroft, J., Baudin, Baxter, W., Benerley, Brewer, J. A., Broome, Brown, R., Bunbury, Burges, Bynoe

Carlile, Carnegie, Carson, Dr., —., Clarkson, B. D., Clifton, Cooper, D., Coppinger, Cox, Cunningham, A., Cunningham, R., Curdie, Cusack, Daintree, Danger, Daniel, Darby, Denham, Dietrich, Dobson, Donaldson, Driffield, Drummond, J., Dutton, Fraser, C., Fullagar, Gilbert, Gilbert and Sharpe, Gunn, Gwyther, Hann, Hartmann, Hawker, Henning, Hill, Homes, Kidd, Lawrence, R. W., Leader, Leycester, Logue, Lombe, Lumholtz, MacArthur, W., McArthur, Capt., McGillivray, Macleay, Maiden, Marten, Maxwell, Milligan, Mitchell, T. L., Mueller, F. von., Oldfield, A., O'Shanesy, Pearson, Pentzke, Persieh, Preiss, Prentice, Reader, Riley, Rodway, Sanford, Schomburgk, Rich., Schultz, F., Short, Sieber, Spicer, Sturt, Tate, R., Thozet, Tisdall, Towgood, Veitch, J. G., Veitch, J. H., Verreaux, Walker, A. F., Waterhouse, Weir, Weymouth, Wilhelmi, Wilson, J. B., Wood, C. B.

8.—New Zealand.

(*New Zealand, Norfolk, and adjacent islands, Kermadecs, Auckland, Campbell, Chatham, Antipodes and Macquarie, westward to Kerguelen and Marion.*)

Armstrong, Backhouse and Cunningham, Bidwill, Blandford, Brodie, Buchanan, Cameron, —., Cartwright, T. B., Chapman, H. E., Cheeseman, Colenso, W., Comins, Cunningham, R., Dieffenbach, East, Eaton, E. A., Edgerley, Field, H. C., Filhol, Gibson, R. J. H., Green, Gunn, Haast, Hamilton, A., Hanwell, Hector, Hector and Buchanan, Hetley, Hombron, Homes, Hooker, J. D., Hooker, W., Jennings, A. V., Joliffe, Kidder, Kirk, T., Knight, Kurtz, Lindsay, Logan, Lombe, MacGibbon, Metcalf, Milne, W. G., Munro, Dr., Pascoe, Petrie, Potts, Ralph, Roberts, Shepherd, Sinclair, A., Stephenson, Stokes, Travers, Wakefield, Wright, A. J.

9.—Polynesia.

(*Polynesia, including Hawaiian Islands (Sandwich Islands), and New Caledonia.*)

Arundel, Armstrong, A., Bidwill, Bourgeau, Caldwell, Cartwright, T. B., Comins, Coppinger, Corrie, Crosby, Daniel, Deplanche and Vieillard, Diell, Gill, W. W., Graeffe, Guppy, Hartmann, Heller, Hillebrand, Kaernbach, Layard, E., Le Hunte, Lenormand, Luerssen, McGregor, Macrae, Mann and Brigham, Mathews, A., Milne, W. G., Moerenhout, Moore, C., Moseley, Nightingale, Pancher, Powell, T., Rough, Schomburgk, Rich., Sinclair, A., Sinclair, Mrs., Storck, Thozet, Thurston, Veitch, J. G., Vieillard, Wharton, W. J. L., Whitmee, Yeoward.

10.—Tropical Africa.

(*Tropical Africa, including St. Helena, Ascension, and Cape Verds, Tropical Arabia, and Socotra.*)

Annesley, Armitage, C. H., Baikie, Baines, Barter, Bates, Battcock, Baumann, Bennett, G.. B., Bent, Birdwood, E., Birdwood, W. S., Buchanan, Bulger, Lt., Burton, Burton and Cameron, Callewaert, Cameron, V. L., Carder, Carson, A., Chapman,

Chapman and Baines, Christy, T., Clark, Cole, E., Cole, J. A., Crowther, Crittenden, Cuming, Cummins, Curror, Daniell, Dawodu, Dusén, Easmon, Elliot, G. F. S., Elliott, W. A., Fairholme, Farmer, Forbes, Franqueville, Frere, H. B., Freeman and Lucas, Garden, Garrett, Gordon, H. J., Grant, J. A., Gurney, Hannington, Hart, W. H., Haughton, Henderson, A., Hens, Hervey, Higginson, Hildebrandt, Hollrung, Holmewood, Holst, Hooker, J. D., Hunter, Major, Hutchinson, T. T., Ingram, Irving, James and Thrupp, Johnson, W. H., Johnstone, Sir H. H., Jungner, Kalbreyer, Kidston, Kingsley, Kirk, J., Krause, Last, Laurent, Laws, Lester, Lewis, Livingstone, Loomis, Ludwig, Lugard, Lunt, McCabe, McClounie, Mahon, Mair, Mann, G. Marloth, Meller, Melliss, Melville, Millen, Millson, Milne, W. G., Moller, Moloney, Monteiro, J. J., Moore, C., Morris, D., New, Newton, Nutt, Oakeshott, Oates, F., Oldfield, Rd., O'Neill, Ozanne, Parker, C., Perrottet, Perry, W. W., Peters, A., Petherick, Petit, Pfundt, Phillips, E. L., Plowden, Preuss, Purdy, Quartin Dillon, Rattray, Reade, Rowland, Rumsey, Schimper, Schomburgk, Rob., Schweinfurth, Scott, W. L., Selwyn, Slade, Smith, Chr., Smith, C. S., Sonder, Soyaux, Staudt, Steere, Bp., Steudner, Steward, Rev. —., Stuhlmann, Sutherland, Thierry, Thomson, G., Thomson, J., Thomson, T., Thomson, W. C., Vogel, Volkens, Wakefield, T., Waller, Wellby, Welwitsch, Whitfield, Whitehead, Whyte, Whyte and McClounie, Williams, J. A., Wilson, C. T., Wollaston.

11.—Mascarene Islands.

(*Madagascar, Mauritius, Bourbon, Seychelles and islets, including Comoro Islands.*)

Madagascar.—Baker, H., Baron, Blackburn (Hb.), Blythe, Cameron, James, Cameron, John, Commerson, Du Petit Thouars, Elliot, G. F. S., Ellis, W., Forsyth Major, Fox, Dr., Geheeb, Gerrard, Gilpin, Hildebrandt, Humblot, Kitching, Kuhn, Last, Moss, Owsl, Parker, G. W., Pervillé, Pool, Rothery, Warpur.

Mauritius.—Barkly, Bevan, Bewsher, Blackburn (Hb.), Blythe, Bojer, Bouton, Cantley, Cattell, Duncan, J., Duncan, J. W., Geheeb, Johnstone, Dr. H. H., Meller, Morrow, D., Myrien, Pike, W., Rawson, Schlaefli, Telfair.

Bourbon.—Balfour, I. B., Cordemoy, Delisle, Griffith, T. A., Kirk, J., Meller, Nevill, Sieber, Vieillard, Wright, E. P.

12.—South Africa.

(*South Africa, including Tristan d'Acunha, Gough, St. Paul and Amsterdam Islands.*

Adlam, Allison, Anderson, C. T., Armstrong, Dr. and Miss, Arderne, Arnot, Atherstone, Ayres, Barber, M. E., Barber, L. M., Barkly, Baur, L. R., Bewsher, Blagrove, Bolton, Bolus, Bommer, Bowie, Brehm, Buchanan, Rev. J., Burchell, Burke, Carmichael,

Chapman and Baines, Colenso, Bp., Collins, Cooper, T., Cordukes, De Crespigny, Denton, Drège, Dumbleton, D'Urban, Eaton, E. A., Ecklon and Zeyher, Elliot, G. F. S., Evans, Feilden, Flanagan, Galpin, Gill, Dr., Harvey, Haygarth, Heudelot, Hutton, Keit, Kennedy, Knobel, Krauss, MacGibbon, McGillivray and Milne, McKen, McKen and Buchanan, McLea, McNab, W. R., MacOwan, MacOwan and Bolus, Mader, Marloth, Marshall, G. A. K., Monteiro, J. J., Monteiro, Mrs., Moxon, Mudd, C., Mund, Nelson, W., Niven, Oates, C. G., O'Brien, Pappe, Pearson, Peek, Perry, J. W., Phillips, R. C., Plant, Prior, Ramsay, Rawson, Rehmann, Robinson, H., Rogers, Rutherford, Sanderson, Saunders, K., Schinz, Schlechter, Scully, W. C., Shaw, Sim, T. R., Smith, A., Stainbank, Stanger, Taylor, K., Thom, Tuck and Barber, Tyson, Veitch, P. C. M., Vieillard, Villet, Waterfield, Weir, S., Wolley-Dod, A. H., Wood, J. M., Yorke, H. F. A., Zeyher.

13.—North America.

(*Canada, United States, Greenland, Bermudas, and Lower California.*)

Allen, O. D., Anderson, C. L., Austin, C. F., Austin, R. M., Bailey, L. H., Baldwin, Dr., Barclay, A., Barnston, J., Barnston, G., Beadle, C. D., Beardsley, Bebb, Beck, Beechey, Bioletti, Bolander, Bourgeau, Brandegee, Brenton, Brewer, W. H., Britton, E. G., Britton, N. L., Brown, R., Campst., Bryce, Burke, Bush, Campbell, R., Cameron, Major, Carey, J., Cockerell, Cooley, Coulter, Coville, and Funston, Curtis, M. A., Curtiss, A. H., Dall, Davenport, Davy, Dawson, Dieck, Divers, Douglas, Drummond, T., Eaton, D. C., Ellis, J. B., Ellis and Everhart, Elwes, Engelmann, Farlow, Farlow, Anderson, and Eaton, Fletcher, Francheschi, Funston, Gairdner, Gattinger, Geyer, Giesecke, Gordon, A., Gorman, Grant, —, Gray, A., Greene, B. D., Greene, E. L., Hall, Haydon, Hiller, Henry, Mrs. and Miss, Hickson, Hoey, Holböll, Holub, Horner, Jepson, Johnson, E. P., Jones, Kellermann, Kiærskou, Lamson-Scribner, Langley, Lapham, Lay, Lea, Lefroy, Leggett, Leibold, Leiburg, Lemmon, Lenormand, R., Lindheimer, Lippencott, Lobb, W., Lyall, Macoun, J., Macoun, J. M., MacPherson, Markham, A. H., Mellichamp, Menzies, Middleton, Miles, Mill, Milne, J., Mills, Millspaugh, Mohr, Moseley, Mott, Mulford, Munroe, Myers, Nash, Newberry, Nicholson, G., Nuttall, T., Nuttall, R. K., Oliver, W. T., Olney, Orcutt, Palmer, Pammel, Parish, S. B. and W. F., Parry, C. C., Parry and Bigelow, Peter, Peters, J. M., Pickering, Pike, W., Pringle, Ravenel, Reed, L. D., Richard, Richardson, Rink, Roberts, G., Robinson, B. L., Roezl, Rowlee, Rydberg, Sandberg, Sargent, Sartwell, Schweinitz, Scoresby, Scouler, Short, C. W., Siler, Smith, J. T., Stark, Tainturier des Essarts, Taylor, A. S., Taylor, J. W., Thurber, Todd, Tolmie, Torrey, Townsend, Tuckerman, Underwood, Vasey, Vasey and Pringle, Waite, Watson, G., Watson S., Watt, D. A. P., Willits, Wislizenus, Wood, C. B., Wray, T. P., Wright, C., Wright, W. G.

14.—Central America.

(*Mexico and Central America.*)

Barclay, G. W., Barlee, Bilimek, Blancaneaux, Botteri, Briggs, T. Cammock, Christie, H., Cooper, J. J., Coulter, Dovat, Dundas, Eaton and Edwards, Ehrenberg, C., Endres, Ervendberg, Finck, Forbes, Dr. J., Friederichsthal, Funck, Galeotti, Gaumer, Ghiesbreght, Giffard, Goode, Gouin, Graham, G. H., Gregg, Haage and Schmidt, Hahn, Halstedt, Hancock, Harrison, Hartweg, Hayes, Henchman, Hickson, Hoffmann, Hooper, Huebsch, Kerber, Kiærskou, Kienast-Zolly, Langlassé, Lay, Lehmann, F. C., Leibold, Lévy, Liebmann, Linden, J. J., Lindheimer, Lumholtz, Mitchell, E. O., Mociño, Moloney, Morris, D., Mueller, Fred., Nelson, E. W. Oersted, Palmer, Parkinson, Parry and Palmer, Parry and Bigelow, Pfau, Pittier, Pringle, Repper, Requena, Roezl, Rose, Rovirosa, Salvin, Sartorius, Schaffner, Schell, Schiede and Deppe, Skinner, Smith, F., Smith, J. D., Smith, R., Staines, Staples, Sumichrast, Tate, R., Temple, Thurber, Tonduz and Pittier, Tuerckheim, Watson, S., Wendland, Willits, Wooton, Zahn.

15.—West Indies.

Ansted, Bancroft, E. N., Barber, C. A., Battcock, Black, —, Blow, Broadway, Chandler, Cockerell, Copeland, Crueger, Distin, Eggers, Elliott, W. R., Fendler, Finlay, Garber, Gorman, Gray, J., Greene, B. D., Guerke, Guilding, Hahn, Hancock, Harris, Hart, J. H., Higgins, Holme, Hooper, Horne, Iliff, Imray, Jaeger, Jenman, Leibold, L'Herminier, Lockhart, D., Lockhart, J., Macfadyen, McNab, G., Marsh, Mazé, Meyer, G. L., Morris, D., Murray and Elliott, Murray, H. B., Nicholls, H. A. A., Nicholson, T., Nock and Sherring, Northrop, Poeppig, Powell, H., Prestoe, Purdie, Ramage, Roberts, G., Robinson, H., Robinson, W., Rothery, Ruegel, Schomburgk, Rob., Sherring, Sieber, Sintenis, P., Skeete, Smith, W. G., Smith, H. H., Smith, H. H., and G. W., Syme, G., Taylor, M., Thomson, R., Tillson, Waby, Walsh, Wharton, G., Wilson, W., Wright, C., Wullschlaegel.

16.—East Tropical South America.

(*Brazil, the Guianas, and Paraguay.*)

Brazil.—Allemão, Baird, Balansa, Blanchet, Boog, Bunbury, Burchell, Capanema, Carr, Cartwright, H., Darwin, Ferreira, Floyer, Mrs., Fox, —, Gardner, Geheeb, Glaziou, Glocken, Graham, M., Gregory, H. K., Kerr, Lindberg, G. A., Lindman, Longman, McGillivray and Milne, Martius, Maximowicz (?), Mello, Moore, S. L., Morong, Moseley, Mueller, Fritz, Pentland, Parodi, Portella, Quelch, Ramsay, Rand, Regnell, Reineck and Czermak, Ridley, Riedel, Salzmann, Sello, Spruce, Thering, Trail, Tweedie, Vauthier, Verreaux, Wainio, Wallace, Warming, Weir, J., Wetherell, Williams, C. H., Worsley.

Guiana.—Appun, Boughton, Campbell, W. H., Goebel, Hostmann, im Thurn, Jenman, Kappler, Leprieur, McConnell and Quelch, Rodie, Rothery, Sagot, Schomburgk, R. H.

Paraguay.—Balansa, Barclay, G. W., Grosse, Hassler, Lindman

17.—West Tropical South America.

(*Venezuela, Columbia (New Grenada), Ecuador, Peru, Bolivia, Galapagos, and Cocos Island.*)

Anderson, André, Bang, Baur, G., Barclay, G. W., Bowman, D., Bruckmueller, Castello, Charlesworth, Claes, Cross, Crueger, Darwin, Davis, Dombey, Eggers, Ernst, Fendler, Goebel, Habel, Hall, —, Hartweg, Henchman, Holten, Jameson, Kalbreyer, Karten, F., Lehmann, F. C., Linden, J. J., Linden, L., Lindig, Maclean, Mandon, Mark, Markham, A. H., Markham, C. R., Mathews, A., Moritz, Nation, Patin, Pavon, Pearce, Pentland, Porter, R. K., Roezl, Rusby, Samson, Schlim, Shuttleworth, Sodiro, Spruce, Steere, Thomson, R., Triana, Turner, Wagener, Wallis, Warszewicz, Watts, Weir, W., White, R. B., Willits, Wood, Capt., Wyatt.

18.—Temperate South America.

(*Chili, Argentina, Urugnay, Patagonia, Juan Fernandez, Falklands, and South Georgia.*)

Abbott, Anderson, R., Andrews, J. L. W., Arechavalata, Ball, J., Barnéoud, Bridges, Caldcleugh, Claraz, Coppinger, Cranwell, Cunningham, R. O., Downton, Eaton, A. E., Edmonston, Eights, Fair, Felippone, Firmin, Gay, C., Germain, Gibert, Gillies, Hariot, Harman, Hieronymus, Jameson, King, P., Kurtz, Lechler, Lettsom, Leybold, Linney, Lorentz, Miers, Morong, Moseley, Pearce, Philippi, Poeppig, Reed, E. C., Reynolds, Sainthill, St. Hilaire, Sinclair, A., Spencer, Sulivan, J. B., Watson, M. E., Wright,—.

II.—MISCELLANEOUS NOTES.

Mr. Edwin John Butler, M.B., has been appointed, on the recommendation of Kew, by the Secretary of State for India, Cryptogamic Botanist for India, to reside at Calcutta. Having been educated at Queen's College, Cork, Dr. Butler engaged in research under Dr. Marcus Hartog, the Professor of Natural History, from 1895 to 1898. From January 1, 1899, he obtained a research scholarship from the the Commissioners for the 1851 Exhibition. With the aid of this he spent nine months in the laboratory of Professor Van Tieghem at the Jardin des Plantes, Paris, receiving also assistance from Professor Maxime Cornu. Subsequently he spent five months at the Laboratoire d'Enseignement Supérieure at Antibes under Dr. Poirault, and three months in the laboratory of Professor Oltmanns at the University of Freiburg i. B. Finally, he devoted the remaining months of 1900 to work in the Jodrell Laboratory at Kew.

Dr. Butler was permitted to spend a short time in Ceylon, on his way to India, in order to study the methods of work at the Royal Botanic Gardens, Peradeniya, and would be considered on duty from the date of his arrival at Colombo.

Mr. EDGAR WILLIAM FOSTER, a member of the gardening staff of the Royal Botanic Gardens, has been appointed, on the recommendation of Kew, by the Secretary of State for the Colonies, Curator of the Botanic Station, Lagos.

Visitors during 1900.—The number of persons who visited the Royal Botanic Gardens during the year 1900 was 1,111,024. That for 1899 was 1,197,565. The average, 1890–99, was 1,419,755. The total number on Sundays was 487,772, and on week-days 623,252. The maximum number on any one day was 80,723, on June 4, and the smallest 47, on February 15. The total number on Sundays varied little from that of the previous year, while the aggregate attendance on week-days was considerably less.

The detailed monthly returns are given below :—

January	...	...	...	...	14,015
February	...	...	...	...	16,679
March	...	...	...	...	31,107
April	...	...	...	...	146,623
May	...	...	...	...	114,404
June	...	...	...	...	240,715
July	...	...	...	...	172,588
August	...	...	...	...	163,585
September	...	...	...	...	125,557
October	...	...	...	...	51,930
November	...	..	...	...	18,226
December	...	...	...	...	15,595

Kew Bulletin.—The extreme pressure of the demands of important Government work has made it necessary to suspend for a time the publication of the Kew Bulletin. It will now be resumed. The volume for 1899 will shortly be issued. That for 1900 is in preparation.

Botanical Magazine for December.—*Dendrobium spectabile* is an extraordinarily fine species from New Guinea and the Solomon Islands. Its flowers, which are borne in a lax raceme, are three inches broad, white, streaked and spotted with purple. The drawing was made from a specimen lent by J. T. Bennett-Poë, Esq. *Adesmia boronioides*, a native of South-Eastern Patagonia, is a shrubby leguminous plant, covered in nearly all its parts with prominent balsamiferous glands. Its flowers are orange-yellow with streaks of purple on the standard, and are borne in erect terminal racemes. The specimen figured was sent to Kew by A. K. Bulley, Esq., in whose garden at Neston, Cheshire, it is hardy and flowers profusely. A plant which has been at Kew for some years has not yet flowered. The Mexican *Dasylirion quadrangulatum*, known also as *Agave striata*, var. *recurva*, is represented in the Succulent House at Kew by a female plant with a stem eighteen inches high, a tuft of leaves six feet in

diameter, which bore a scape eight feet high. Its fruits superficially resemble those of *Rumex*. *Matthiola coronopifolia*, a Sicilian species, has been referred by some authors to *M. tristis*, from which it differs in the colour of the flowers; these, in *M. coronopifolia*, are purple. The Kew plants were raised from seed obtained from Mr. Sündermann, of Lindau, Bavaria. *Passiflora capsularis*, from Brazil, is an elegant species with rose-red flowers about two inches in diameter. The specimen drawn was taken from a plant presented to Kew by the late Professor Allman, F.R.S., in 1896. Volume 126 of the Magazine, now completed, is dedicated to Major D. Prain, Superintendent of the Royal Botanic Garden, Calcutta.

Botanical Magazine for January.—*Hibiscus Manihot* has been figured twice before in the Magazine, but from specimens with relatively small flowers. Those depicted in the present plate are five inches in diameter, pale yellow with a crimson blotch at the base of each petal. This species, of which there is a fine plant in the Mexican House at Kew, is a native of China and Japan. *Lhotskya ericoides* is a slender-growing myrtaceous plant with heath-like leaves and small white flowers. The type of the drawing was raised from seeds collected by Mr. James Veitch at King George's Sound, Western Australia, in 1893. *Sarcochilus lilacinus*, from the Malayan Peninsula and Islands, is peculiar among orchids from its habit of climbing bushes, which it does by means of its long aerial roots. Its rose-lilac flowers last only a day. Kew received the plant drawn from H. N. Ridley, Esq., M.A., F.L.S., Director of the Gardens and Forest Department, Straits Settlements. The Central Asiatic *Pyrus tianschanica* belongs to the section *Sorbus*, and is closely allied to *P. Aucuparia*, differing in its leaves, in having larger flowers, and fruits of five carpels. The Kew specimen was obtained by purchase in 1896. *Allium ostrowskianum*, a particularly fine species from Western Turkestan, was figured from a specimen communicated by the Hon. Charles Ellis, of Frensham Hall, Haslemere. It has a lax-flowered umbel about three and a half inches in diameter; the perianth segments are bright rose-red with a green median nerve.

Flora of Tropical Africa.—Part III., concluding Vol. V., edited by the Director, was published in December. It brings the portion of the work included down to *Plantagineæ*. It is accompanied by the following preface:—

The seventh volume of the Flora of Tropical Africa was completed in 1898. The circumstances under which the work was resumed are stated in the preface.

The choice of the next instalment to be taken up was mainly determined by the assistance I was able to secure from contributors. Amongst these I am more especially indebted to my friend Mr. C. B. Clarke, F.R.S., who not merely undertook the difficult task of elaborating the *Acanthaceæ*, which occupy

half the volume, but made a journey to Berlin to study the material preserved in the herbarium of the Royal Botanic Museum.

For the amended definition of the regions into which the area of the flora is divided reference may be made to the preface to the seventh volume.

In the prefaces to the first and seventh volumes will be found an enumeration of the materials employed up to 1868 and of the most important additions to them which have reached Kew since. The only further collections at Kew cited in the present volume are :—

III. NILE LAND. J. Theodore Bent. Collection from the coast Region of Nubia in 1895–6 (Died 1897).

IV. LOWER GUINEA. Dr. Ch. Bommer, Brussels. A collection of Lindner's Damaraland plants.

VI. MOZAMBIQUE. Professor C. Fritsch, Graz. A collection made in the Zambesi Valley at Boruma by Father L. Menyharth, S. J. (Died 1899).

The present volume was ready for the press at the beginning of 1898. The inconvenience of the delay in publication is obvious. The contributors see other writers secure the priority of their work, while the manuscript has continually to be re-written to incorporate what has been published while it is waiting for the printer. For all this I am in no way responsible. I prepare the work; but over printing and publication I have not the slightest control. And as no less than five Government departments have a say in the matter, the task of getting them into line is one of no small difficulty. A fire which took place at the printer's in December of last year was a further impediment. Fortunately, however, most of the manuscript was recovered eventually from the ruins.

Three more volumes will complete the work as originally planned. Their preparation presents no inherent difficulty, but their fate lies on the lap of the gods.

I must again record my acknowledgments of the assistance given me by Mr. C. H. Wright in preparing the manuscript for the press and in checking the proofs, and to Mr. N. E. Brown for working out the geographical distribution.

W. T. T. D.

Kew, November 1900.

"Terblanz" (*Faurea saligna*, Harv.).—Professor MacOwan, Government Botanist, Cape Colony, in a recent report, gives the following note on the identification of a South African timber known as "Terblanz" :—

EXTRACT from the Report of the Cape Government Botanist for the year 1898, pp. 6–7.

"There has for many years been a doubt as to the identity of a Cape ornamental timber tree known as 'Terblanz.' Nearly twenty years ago, Messrs. D. Isaacs, of this city, showed me a choice polished specimen of considerable size, which was destined for

exhibition at the Paris *Exposition*. No leaf, fruit, or flower accompanied it, and to my great regret the only information which could be given was that it was certainly some species of the order *Proteaceæ*. The arrangement of the wood fibres showed a close resemblance to that of *Protea grandiflora*, L., but with a difference. I know of no wood in which the interlacing of the tissues gives in such perfection the effect imitated by painters in what they term 'over-graining.' It had to be sent away as 'Terblanz, an unknown Proteaceous timber tree of the Cape.' Enquiries made of the forest-officers elicited no further information than that trees of Terblanz, or what was supposed to be it, existed in a remote spot in the Knysna forest; but, although kept under observation for some years, they had never been known to flower. This year, however, Mr. C. B. McNaughton, in charge of the Knysna conservancy, found one of these trees flowering and seeding. Specimens were sent up to the herbarium, and to my great satisfaction the puzzle of years resolved itself. Terblanz is *Faurea saligna*, Harv., figured and described in 1846 in *Hooker's Journal of Botany*, vol. v., p. 373. By the care of the collector a sufficient number of specimens has been obtained to secure its distribution in *Centuria XIX.*, to be issued in 1899. Zeyher's specimens are from Magalisberg, and seem to belong to his journey made with Burke, the collector of Cape antelopes for the Earl of Derby. Why this issue is quoted in the *Flora Capensis* under the reference '*Burke and Zeyher*' is not easy to understand. Burke had but little to do with the plants, and even in the matter of the *bokken*, for whose capture he had come out from England, he was largely indebted to the life-long experience of his modest companion, who had to be botanist and hunter too. The tree is said to be not rare in the Magalisberg. This would seem to indicate that the few trees at Knysna are outliers, and occupy the farthest southern extension of the species. The inflorescence is peculiar, and unlike that of any of our other arborescent Proteaceæ. It is rather like some lax-spiked *Grevillea* of Australia."

A slab of this wood labelled as *Protea sp.* was exhibited in the Cape Court of the Colonial and Indian Exhibition, 1886. The Cape catalogue describes the tree as being "from 30 to 40 feet high and from 2 to $2\frac{1}{2}$ feet in diam., wood hard, heavy, reticulated, little known. Few trees found in George and Knysna forests."

Prof. MacOwan has very kindly forwarded a small section of the wood for the Museum. It is well figured and of similar colour to mahogany, and agrees very well in its characteristics with some of the Australian representatives of the order which are used for furniture, veneers, &c.

Ormonde House.—In the *Kew Bulletin* (1891, p. 285) it is stated that the "site of Ormonde House is not certainly known, but it was apparently in the northern part of the Old Deer Park, near the Queen's Cottage Grounds." The only recognised views of the house in the collection of engravings at Kew at the time that was written were without the surroundings. Recently a book has been

acquired for the library, entitled *A New System of Agriculture, being a Complete Body of Husbandry and Gardening*, by John Laurence, M.A.; London, 1726. The frontispiece of this work, which is dedicated to Her Royal Highness the Princess of Wales, is a "Perspective view of His Royal Highness the Prince of Wales's House and Gardens at Richmond." This is no doubt Ormonde House, all traces of which have disappeared. On comparing the view in Laurence's book with Rocque's map (1734) and Burrell's map (1771), it was evident that the "King's Pallace" of the former was the same as Ormonde House; consequently there is no longer any doubt as to the position of the latter.

Date Cultivation in South Australia.—The *Kew Bulletin* for 1895 (pp. 161, 162) contains a note on the cultivation of the Date in South Australia. The following information records the continued success of the experiment:—

EXTRACT from *Report upon State Forest Administration in South Australia* for the year 1897–98 (p. 8).

Excellent dates have now been produced at Hergott plantation for six years running. Twelve palms have fruited there this year, and the sample of dates received in Adelaide in March last were distributed in the usual way and greatly appreciated, as on all previous occasions. The *Deglet Nour* palms at Lake Harry also bore some dates this year, the seed of which was thoroughly developed, but the flesh of the fruit was not as well matured as will no doubt ultimately be the case when the palms get more thoroughly accustomed to their Australian surroundings.

Natal Plants.—A brief notice of the first part of an illustrated work bearing this title appeared in the *Kew Bulletin*, 1898, p. 206. Succeeding parts have rapidly followed. The full title is: *Descriptions and Figures of Natal Indigenous Plants, with Notes on their Distribution, Economic Value, Native Names, &c., &c.*, by J. Medley Wood, A.L.S., Curator of Natal Botanic Gardens, Durban, and Maurice S. Evans, M.L.A., F.Z.S. The first volume was completed in 1899, and contains 100 plates and descriptive letterpress of as many different species of plants belonging to a variety of natural orders. The second volume is entirely devoted to grasses. Two parts of this volume have appeared, each containing 25 plates. The first part of the third volume has also been published, containing a miscellaneous selection of species. Mr. Wood is sole author since the completion of the first volume. It is to be hoped that the sale of the work is sufficient to justify its continuation, because figures are almost indispensable to enable the beginner in botany to identify plants, and this publication should give an impetus to the study of botany in South Africa, as similar works have in some of our other Colonies, notably in Australasia.

Kew Palace Linden.—In the *Kew Bulletin* for 1891, p. 318, mention is made of a large linden near the gate of Kew Palace, under the shade of which, according to tradition, the children of George III. used to sit. The tree was a pollard of great size and beauty. The girth of the trunk at four feet from the ground was 18 ft. 7 ins. A storm on January 27 broke off some of the principal limbs and left it little more than a wreck.

LEAF DISEASES.

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

Nos. 172–174.] APRIL—JUNE. [1901.

I.—PLANT DISEASES.—II. LEAF-CURL.

(*Exoascus deformans*, Fuckel.)

(With Plate.)

This well-known disease is at times very destructive to peach foliage; less frequently almond and apricot leaves are also attacked. The popular name "leaf-curl," or simply "curl," has reference to the curled and distorted appearance of the diseased leaves. The infected tissue thickens and is at first of a pale green colour; then it gradually changes to purple or pink; and finally the convex parts of such leaves become covered with a very delicate whitish bloom, which presents a velvety appearance when seen through a pocket-lens. This effect is caused by the fruit of the fungus, which bursts through the cuticle of the leaf thus enabling the spores to be diffused by wind, rain, insects, &c.

The youngest shoots are also swollen and distorted by the parasite, whose mycelium is perennial in the branches and each season passes into the leaf-buds, which consequently contain the mycelium of the fungus in their tissues when they expand.

When once attacked a tree rarely recovers unless prompt preventive measures are taken, but becomes more diseased as time goes on, owing to the spread of the mycelium present in the tissues.

The parasite does not develop every season, at least not to any appreciable extent, even on trees that are known to contain mycelium in their tissues. It is least abundant during those years when the foliage reaches the fully developed condition without a check, whereas it is most abundant when the young leaves are checked in their growth by a sudden chill, and the more so if this chill follows damp warm weather. On the other hand, when evidence of the growth of the fungus has been unmistakable, its further course has been completely arrested by a sudden increase in temperature.

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The disease was exceptionally abundant in the South of England during the season following the very cold winter of 1894–95.

Frequently the disease is at first confined to one or few branches of a tree, but it spreads quickly, the spores being washed from diseased to healthy portions. During seasons when the disease is especially abundant, it is not unusual for the trees to lose all their leaves before midsummer. Later in the season a second crop of leaves appears, and these are not attacked by the fungus; nevertheless a considerable amount of injury is done, the crop of fruit in such cases is practically valueless, and the wood is imperfectly matured.

Nursery stock that has suffered from the disease is worthless.

Exoascus deformans is a very primitive type of the enormous assemblage of fungi known as Ascomycetes, which are characterised by having the spores produced within large cells or asci. These asci are produced in considerable numbers, and are usually imbedded in, or surrounded by a special protective structure, as in truffles, morels, &c. But in the present species, the scanty mycelium is located between the epidermis and cuticle of the host-plant, and gives origin to asci which burst through the cuticle unaccompanied by any kind of protective covering whatever.

Protective measures.—Leaf-curl is a disease which, if systematically and persistently attended to, can easily be kept in check. The mycelium of the fungus does not extend backwards in a branch from the point of infection, but follows the young growth, consequently all diseased branches should be cut out behind the point of infection. There should be no hesitation about pruning, for when a branch is once diseased it does not produce fruit, but only fungus spores, and these infect other healthy branches.

Diseased fallen leaves should be collected and burned.

Where the disease has been present in the preceding season the trees should be sprayed with dilute Bordeaux mixture just when the leaf-buds are expanding, to guard against infection from floating spores.

Fig. 1, Diseased peach leaves; nat. size. Fig. 2, Section of portion of a leaf, showing the asci seated upon the epidermis and bursting through the cuticle; × 400.

III. SYCAMORE LEAF-BLOTCH.

(*Rhytisma acerinum*, Fries.)

(With Plate.)

The conspicuous black spots so common on the upper surface of living leaves of *Acer Pseudo-platanus* (sycamore), *A. campestre* (maple), *A. rubrum*, and *A. platanoides* are of fungous origin, and when present on almost every leaf, as is usually the case in attacked trees, do considerable injury by causing premature defoliation. The wood in such a case is imperfectly matured, and

rendered highly susceptible to the attacks of other parasitic fungi, more especially of *Nectria cinnabarina*, which soon covers the branches with its beautiful coral-red, wart-like clusters of fruit. Young trees soon succumb to the combined attack of these fungi, and it is not at all unusual to see branches of large trees killed by the same means.

The fungus first causes yellowish blotches to appear on the leaves in June or July; these spots soon change to brown and then black, increase in thickness, and the upper surface becomes corrugated or wrinkled. During the autumn the surface of the blotches becomes covered with myriads of very minute bodies called spermatia; their function is not known, and they have not been observed to germinate.

During winter, after the leaves have fallen, fruit is produced in special portions of the black patches, and the needle-shaped spores escape in the following spring, when they are carried by wind. Those that happen to alight on damp young sycamore leaves germinate, enter the tissues, and give origin to the black patches.

Protective measures.—Remembering that the disease depends on the presence of spores formed on dead and fallen leaves in the spring, all that is necessary to prevent the appearance of the fungus is to collect and burn all fallen leaves before the spores escape. Where this has been done thoroughly the disease has ceased to exist.

Fig. 3, A sycamore leaf showing *Rhytisma* blotches; nat. size.

G. Massee.

II.—GUTTA PERCHA FROM A CHINESE TREE.

(*Eucommia ulmoides*, Oliv.)

Between 1887 and 1890, from several localities on the middle Yangtze-Kiang river, Dr. A. Henry sent to Kew fruiting specimens of a peculiar Chinese plant, with the statement that its bark is a most valued medicine in China, where it is named "Tu-chung," and that the tree is cultivated for it. "I have never seen it wild," he adds, "but I was informed it occurs so in Fang and other districts to the north." Fang is the name of a region near the middle part of the Yangtze-Kiang in the province of Hupeh.

This plant Prof. D. Oliver described (*Hooker's Icones Plantarum*, t. 1950) as *Eucommia ulmoides*.

Flowers not being available, and what material he had so peculiar that its relationships were not obvious, Prof. Oliver left the determination of the order of *Eucommia* open, merely adding that the tribe Phyllantheæ of Euphorbiaceæ occurred to him as of probable affinity.

The interest to us lies not so much in this as in his indication of the presence in the tissues of gutta percha. The discovery he made known in the following words:—

"The most singular feature about the plant is the extraordinary abundance of an elastic gum in all the younger tissues—excepting

perhaps the wood proper,—in the bark (in the usual sense of the word), the leaves and petioles, and pericarp ; any of these, snapped across, and the parts drawn asunder, exhibit the silvery sheen of innumerable threads of this gum."

His account continues : "The morphological relations and general histology of the cells which give rise to the substance, we hope to have the opportunity of describing from specimens in fluid or living, which, through Dr. Henry's kind offices, there is probability we may soon receive."

When the promised specimens arrived Mr. (now Prof.) F. E. Weiss undertook the examination of them, and from the account of his investigations, published in the Transactions of the Linnean Society (Series 2, Botany, iii., p. 243), the following sentences are drawn :—

"The threads of *Eucommia* consist of caoutchouc, for they are insoluble in alcohol, acids and alkalis, though they become soft when treated with ammonia. They dissolve in chloroform and turpentine, and swell up in ether. When heated they melt, and they burn with the characteristic smell of burning rubber.

"From the bark the rubber can very readily be extracted. If the bark be broken in pieces and pounded in a mortar, the mass can be roughly separated into two parts, one consisting of the tangled elastic threads, with small bits of broken bark adhering to them, the other chiefly of bits of bark containing, no doubt, smaller pieces of the threads. From both parts chloroform will dissolve out caoutchouc, a larger amount naturally from the portion which consists chiefly of the threads. Thus, a sample of the threads and bark weighing 443 mg. gave as much as 25 mg. of caoutchouc, while the remaining bark, weighing 607 mg., yielded only 6 mg. Taking the two quantities together, the yield of caoutchouc was 3 per cent. of the weight of the dry bark, and the same figure was arrived at independently by Prof. F. W. Oliver with another sample.

"The threads are clear and homogeneous, and the only impurity in the chloroform extract seems to be a little resin, which can be washed out with alcohol.

"Whether the bark can be made use of commercially I must leave to those who are more experienced in technical matters.

"The distribution of the caoutchouc-containing cells I had been able to determine from the dry material which I first examined, and these observations were confirmed by the examination of the material preserved in alcohol. They occur in the inner portions of the cortex, very much in the position in which the latex cells of *Euphorbia* are found, but are even more frequent in the secondary phloem, where they run between the companion cells, and in both cases present the appearance of very long narrow cells, attaining such a length that one only occasionally finds their ends.

"In the leaf a group of caoutchouc-containing cells accompanies the ramifying fibro-vascular bundles, running just below the phloem, while in the petiole and all along the bundle of the midrib they form two groups at the sides of the bundle, and do not run below it.

"The pericarp of *Eucommia*, which resembles in appearance that of the elm, is especially rich in these caoutchouc-containing

cells. Below the epidermis we find a few layers of large chlorophyll-containing cortical cells, which become very much compressed in the dry fruit. Within these are the fibro-vascular bundles, the main trunks running longitudinally, and connected by branching and anastomosing lesser bundles. The longitudinal bundles have a strong group of caoutchouc-containing cells accompanying them on their inner side, and immediately beneath them we find a large mass of circularly running cells of the same nature, forming quite a dense coat of hyphæ-like thin-walled cells, showing their cell-walls very distinctly when the caoutchouc has been dissolved out by chloroform."

These investigations did not settle the position of the genus, and Mr. Weiss left the matter with the remark that perhaps the tribe Crotoneæ might include *Eucommia* in preference to Phyllantheæ of the same order—Euphorbiaceæ.

Since these first researches, made on imperfect material, further knowledge has been due to the success of scientific and horticultural establishments in Paris in obtaining first dried flowering specimens and now living plants. From the museum of the Jardin des Plantes came the material whereby Prof. Oliver was enabled to publish a second figure (*Hooker's Icones Plantarum*, t. 2361), and Dr. Solereder's researches (*Berichte der Deutschen botanischen Gesellschaft*, xvii, 1899, p. 387) were made upon flowers sent to him from Paris and fruits supplied from Kew; while the living plants in cultivation at the Jardin Colonial, in the garden of the Faculty of Medicine, and by the firm of Vilmorin, Andrieux, & Co., have supplied material for the anatomical investigations of M. Barthelat (*Journal de Botanique*, xiv., 1900, p. 55) and the economic inquiry of MM. Dybowski and Fron (*Comptes Rendus de l'Académie des Sciences, Paris*, cxxix., p. 558).

Examination of the dried flowering specimens which had been received in 1894 from a French missionary—Père Farges—and were taken from trees cultivated in Szechuen, caused Professors Oliver and Baillon to agree in placing *Eucommia* in the order Trochodendraceæ. Solereder refers it to Hamamelidaceæ. It is impossible to discuss here the cause of this difference of opinion; let it suffice to say that it indicates the difficulty experienced in assigning to its true position this peculiar genus. Wherever from external morphological characters we place it, the allied plants are not rubber- or gutta-yielding plants. Solereder observes this, and compares in justification of his view the Hippocrateaceæ, in which caoutchouc cells are found in certain species.

There are great differences between the caoutchouc cells of *Eucommia* and of the Euphorbiaceæ. In the latter the whole system is one complicated network arising from the branching of cells which are present in the embryo, which grow with the growing plant, ramifying and uniting, so that the outflow of one cut vessel is more than its contents, because other vessels feed it as it bleeds. In *Eucommia* the caoutchouc vessels do not branch and unite, nor are they present, according to Barthelat, in the embryo. Their contents, too, are more of the nature of gutta percha than indiarubber; and in structure they are much more similar to the

cells which yield the gutta percha in *Dichopsis* than to the laticiferous vessels of *Hevea*, *Manihot*, *Sapium*, and other Euphorbiaceous plants.

To Weiss' description of the anatomy Barthelat adds somewhat. He found that the cortical parenchyma of the young stem contained abundant caoutchouc cells, sometimes running singly, sometimes two or three together. In the roots he found the same cells in the phloem, and in the petioles both in and below the phloem; while in the leaf-blades they were very plentiful, running with the nerves and branching from them to end in a swollen extremity under the palisade parenchyma of the upper surface.

Caoutchouc is thus seen to be present in every part of the plant except the wood and the outer layer of parenchyma of the young roots.

We may now leave the anatomy of the plant to quote from the paper by MM. Dybowski and Fron of the economic possibilities which *Eucommia* may possess. The following statements are translated from pp. 559–560 of their paper :—

"Our attention was called to the similar way in which the contents of the laticiferous vessels of *Palaquium* and *Eucommia* become evident when the leaves are carefully broken; and so we were led to apply to the different organs of the latter plant the procedure recommended by M. Jungfleisch for extracting gutta-percha from the leaves of the former. We experimented first on some fresh leaves of a plant of *Eucommia* grown in the Jardin Colonial. The leaves are 3 to $3\frac{1}{2}$ inches long and $1\frac{1}{2}$ to 2 inches wide. They are oval, pointed at the end, finely dentate, have short stalks, and in length resemble those of our common elm. Operating upon 20 grammes of dried leaves, we obtained 0·45 gr. of products soluble in toluene, which corresponds to a return of 2·25 gr. per cent. This return is poor, remembering that the fresh leaves contain 70 per cent. of water. The bark is full of laticiferous vessels. But the plant which we possess being still very young, we have not been able to take any branches away for examination.

"A second series of observations was made upon the fruits. The fruit is a samara, the length of it being $1\frac{1}{8}$–$1\frac{3}{8}$ inches, and the width nearly $\frac{1}{2}$ inch. Two hundred fruits weigh about 13 to 14 grammes. The extraction of matter soluble in toluene has given us the following results :—

1st attempt, 15 grammes yielded 4·09 gr. soluble in toluene
2nd " " " " 4·12 gr. " "

i.e., 8·20 gr. from 30 grammes of matter, or a yield of 27·34 per cent. We worked with fruits not dried. The fruit contains a small proportion of water, equal to 7·4 per cent.

"The product obtained is of a brown colour with metallic reflections on the surface. Plunged into hot water it becomes soft again, stretches out in thin flakes like goldbeater's skin, and under pressure will take the impress of metal. In cooling it loses its suppleness and becomes quite hard.

"We have submitted the samples to M. Léauté, an authority on the subject, and he has been so kind as to authorise us to say that he considers the gutta percha of good quality. We have but one plant under observation in the Jardin Colonial, but experiments are being made as to the methods of propagating. As at present *Eucommia ulmoides* is only known to exist in China, it is not easy to get a quantity of seed; and, further, germination seems slow and irregular. One sowing produced a single seedling after the lapse of six weeks, a second after five months, and others later. Fortunately cuttings seem to give better results. They will strike root at any season, and give vigorous plants; but spring, when the branches are still leafless, seems to be the most favourable time for taking them."

Eucommia ulmoides promises to be hardy at Kew. In November, 1897, M. Maurice L. de Vilmorin presented a plant to the Royal Botanic Gardens, where it has been grown successfully in the open without protection.

In Paris, where the winters are more severe than at Kew, the plant has survived through them, as testified by the following answer dated November 13, 1899, kindly sent by M. M. de Vilmorin to a question from Kew :—

"Two plants of *Eucommia ulmoides* remained unprotected against a wall in our Paris garden during the two last mild winters, and stood uninjured through as low a temperature as 18° or 19° F."

The Jardin Colonial has already experiments in hand in Annam, Tonkin, and North Africa.

The bark of *Tu chung* had attracted attention long before the discovery of the tree to which it belonged. The following notice appeared in the Kew Report for 1881, p. 47 :—

Chinese collections of Materia Medica often contain specimens of a drug consisting of blackened fragments of bark and small pieces of twigs. These when broken across are seen to contain an abundance of caoutchouc which can be drawn out in fine elastic threads as in the East African Landolphias. Specimens have reached the Kew Museum from the Paris Exhibition of 1878 (with the Chinese name *Tu chung*), and from the Smithsonian Institution, Washington. The botanical origin has been hitherto altogether uncertain. It seems, however, probable from a notice by M. L. Pierre, Director of the Botanic Gardens, Saigon (*Excursions et Reconnaissances*, No. 11, Saigon), that this drug is the produce of *Parameria glandulifera*. This is an apocynaceous climber, ascending to the summits of the highest trees; it is common in the forests of Cochin China. Specimens which M. Pierre has obligingly communicated to Kew prove that the plant is identical with a species which abounds in Southern India. M. Pierre states that "the sap which flows from the stem has exactly the appearance of milk, and may even be used as a substitute for it; it has a slight nutty flavour. In the liquid state it is often employed in medicine by the Annamites and the Cambodians. The bark, after being dried ordinarily in smoke, is sold at 20 to 25 francs the picul (= 133⅓ lbs.), and exported to China The bark is a medicinal product, esteemed by the Chinese."

The real source of the drug was cleared up when the specimen of *Eucommia*, collected in Hupeh in 1887 by Dr. A. Henry, was described in 1890 by Prof. Oliver in the *Icones Plantarum*. Dr. Henry's specimens were accompanied by the following note :—

The *Tu chung* tree, 20–30 feet. The bark of this tree is a most valued medicine with the Chinese, selling at 4*s*. to 8*s*. a lb.

Mons. Pierre concurred that the suggested identification with *Parameria* must be abandoned.

Subsequently further specimens were received from the Museum d'Histoire Naturelle, Paris. These had been collected in Szechuen in 1874 by Rev. Père Farges. They were accompanied by the following note :—

Lorsqu'on brise l'écorce les vaisseaux corticaux s'étirent comme des fils de soies ; c'est pour cela qu'il est appelé aussi vulgairement *sè mien*. Écorce officinale usitée dans les maladies des reins et comme une charpie dans les blessures.

Eucommia is a tree of mountainous districts. The name *Tu chung* is, however, applied by the Chinese to a tree of the plains, which is almost certainly a *Euonymus*, and not improbably *E. hamiltonianus*, Wall. (See *Kew Bulletin*, 1899, p. 219).

III.—SOUTH AFRICAN LOCUST FUNGUS.

(With Plate.)

In many parts of the world the hopes of the agriculturist are frustrated by the sudden appearance of devastating clouds of locusts. Ingenuity has been taxed to find means of destroying them. Some account of the methods employed in the Caucasus was given in the *Kew Bulletin* for 1894 (pp. 215–217).

More recently a method has been devised in South Africa for effecting the destruction of locusts by spreading a disease amongst them. This disease is the result of their infection by a fungus. It admits of easy cultivation, and can readily be distributed to any distance in a portable form.

Some doubts having arisen as to the precise nature of the fungus, specimens were sent to Kew in January, 1900, by the Department of Agriculture, Cape of Good Hope, for examination and report. The whole subject has been carefully discussed in the following paper by Mr. Massee, F.L.S., Principal Assistant (Cryptogams) in the Herbarium of the Royal Botanic Gardens :—

The earliest observations relating to the presence of fungi on living insects refer to species included at the present day under the genus *Cordyceps*, Fries. The well-known "vegetable wasp," or *Guêpe Végétale*, of the West Indies was one of these. In the latest monograph treating of the genus *Cordyceps*[1] 62 species are described as growing on the bodies of different kinds of insects, ants, and scale insects. Among such are included *Cordyceps sinensis*, Sacc., the celebrated Chinese drug, called *Tong-chong-pa-cho*, signifying that it is a plant in summer and

Mucor exiliosus, Massee.

a worm in winter, and *C. Barberi*, Giard, parasitic on the larva of *Diatræa saccharalis*, Fab., the "moth borer," a moth which is very injurious to sugar-cane in the West Indies. (See *Kew Bulletin*, 1892, pp. 153–178.)

Among the earliest of strictly scientific accounts of entomogenous fungi is the one by Balsamo, an Italian, who clearly demonstrated that the destructive silk-worm disease called muscardine is caused by a fungus to which he gave the name of *Botrytis paradoxa*[2], and afterwards changed it to *Botrytis bassiana*[3] in honour of M. Bassi, an Italian interested in silk-worm culture.

In 1853, Robin, a Frenchman, produced an elaborate account, beautifully illustrated, of plants—mostly fungi—parasitic on living animals[4].

Up to this year, in discussing the relation between parasitic fungi and their hosts, the former were looked on as the factor to be combated, and correctly so in the case of "muscardine" and of human diseases supposed to be due to fungi. However, at a later date the idea occurred that entomogenous fungi might possibly be utilised as a means of destroying those insect scourges which from time to time cause such devastation to our crops. The original inspiration of far-reaching results is often difficult to trace. Professor Sebert first suggested[5] the modern idea of utilising entomogenous fungi in the way already indicated. Sebert's observations were briefly as follows : A number of caterpillars of *Arctia villica* were collected for the purpose of observing their development. The caterpillars were attacked by a fungus, their bodies becoming covered by a white mould. It was observed that if diseased caterpillars were placed in a tree along with healthy ones, the latter soon contracted the disease.

Still more recently, Thaxter, in a beautifully illustrated monograph of the *Entomophthoreæ* of the United States, informs us of the widespread destruction among insects caused by various species of fungi[6].

During the last ten years extensive experiments have been conducted, more especially in France and the United States, with the object of perfecting some method by means of which the destruction of noxious insects could be effected in a wholesale manner, and by a process so simple and inexpensive that it could be practised by farmers and horticulturists. The line followed in all instances has been the preparation of a pure culture of the particular fungus found most effective for the purpose required. Tubes or flasks of such pure cultures were distributed free, or sold at a low price, and all the practical man had to do was to dissolve the contents of a tube in a small quantity of water and spray a portion of the ground or tree infested with larvæ or caterpillars ; or, on the other hand, to inoculate a number of captive larvæ or caterpillars, and when the disease manifested itself to liberate the infected victims among their companions in the field. In either case, the assumption is that the disease will spread from infected to healthy individuals. Theoretically the conception is excellent, and under certain atmospheric conditions the result is all that could be desired, but unfortunately the suitable conditions rarely prevail. When the atmosphere is dry the spores or conidia do not germinate, and inoculation by

contact takes place but slowly, whereas during an excess of moisture the conidia are washed into the ground and perish, while the larvæ or caterpillars do not move about, and contact-inoculation is arrested. During calm, damp weather the results are, as already stated, satisfactory.

In France the most destructive insect pest is the larva of the common cockchafer—*Melolontha vulgaris*, Linn.—known as *le ver blanc*, and the fungus utilised for its destruction is *Isaria densa*, Fries.

In the United States the "chinch bug"—*Blissus leucopterus*, Say—is very destructive to cereals. The fungus used for its destruction is *Sporotrichum globuliferum*, Speg., and, after the expenditure of a considerable amount of time and money, Professor Duggar, of the Cornell Agricultural Experiment Station, has expressed his opinion that, although effecting a certain amount of good at times, the outcome is not sufficiently efficient to be of any practical value.

A far greater measure of success appears to have attended the attempt to exterminate the devastating hordes of locusts, more especially the red-winged locust—*Acridium purpuriferum*, Walk.—in South Africa, by means of a fungous parasite.

The fungus was first observed, and its significance realised in 1896, by Mr. A. W. Cooper, of Richmond, Natal, who demonstrated that it could be readily cultivated, that it proved fatal in its effects on locusts, and that it was very contagious. (*Agricultural Journal, Cape of Good Hope*, viii., 1896, pp. 330–331.)

Mr. Cooper afterwards continued his investigations on the locust fungus in the Cape of Good Hope Colonial Bacteriological Institute, being aided by Dr. Black of that Institution, with the result that pure cultures were produced in large quantities, and tubes containing a small amount of the fungus were sold to farmers at sixpence each. In the report of the above-mentioned Institute for 1898, Dr. Edington, the Director, gives a fuller account of the fungus, accompanied by extracts from persons who had proved its efficacy on a large scale. The method of its application is so simple that the natives can use it with benefit. Dr. Edington thinks the fungus probably belongs to the *Entomophthoreæ*, but his very clear description and figures show conclusively that the fungus is a species of *Mucor*[7]. Up to the present, however, the fungus has been distributed as "the locust fungus," and no scientific name has been used.

Quite recently Mr. C. P. Lounsburg, Government Entomologist, Cape of Good Hope, addressed a letter to Kew, asking for a correct determination of the fungus, which, on account of its proved utility as a destroyer of locusts, it was presumed might also be of value in destroying fruit-tree caterpillars. In the meantime, Mr. D. McAlpine, Government Vegetable Pathologist of Victoria, had announced[8] that the Cape locust fungus was *Mucor racemosus*, Fres., hence a correct determination of the fungus became a necessity, as it is known that certain species of *Mucor* are destructive to fruit.

Six tubes containing the "locust fungus," two from Natal and four from Cape Colony, accompanied the letter from Mr. Lounsburg, and, on cultivation, proved to be pure cultures

of one and the same fungus—a species of *Mucor*. Spores obtained from this material were sown on sterilized bread paste, pineapple, and uninjured grapes respectively, and in each instance the matrix was completely covered with a dense snow-white mycelium within 24 hours. Six hours later the mycelium assumed a greyish tint, which microscopic examination showed to be due to the presence of myriads of globose sporangia of a pale grey colour, the mycelium remaining pure white. Forty hours from the sowing of the spores, the entire mass of mycelium was dark grey to the naked eye; microscopic examination showed this appearance to be due to the innumerable mature black sporangia, the mycelium still remaining colourless, or at most here and there tinged with amber. The temperature ranged from 70° to 75° F.

The sporangia are globose and black at maturity, and the surface is frosted with a very delicate layer of lime crystals. The size varies considerably, depending on the substance on which the fungus is grown, but the average diameter is about 80 μ, although in many instances more than double that size is attained. The wall of the sporangium is pale steel-grey when seen by transmitted light. The large globose or broadly obovate columella is colourless. The spores are colourless, elliptical, and average 5–6 × 3·5–4 μ.

The sporangia are produced in a racemose or corymbose manner on short branchlets, which are often furnished with a transverse septum near the point of origin from the main branch, and are always immersed in the loose weft of superficial mycelium, contrary to what occurs in other species of *Mucor*, where the sporangia are elevated on elongated sporangiophores. The vegetative mycelium immersed in the matrix is very abundant, densely branched—the thickest portions varying from 10–25 μ in diameter—and expanding at intervals into irregular swellings containing reserve material. The thicker branches of immersed mycelium often contain large masses of a highly refractive substance in their interior. Septa are abundant in the mycelium immersed in the matrix, and are by no means rare in the aërial portions.

In addition to the nutritive media already enumerated, the fungus grew readily on gelatine containing a decoction of plum juice, in water containing a 10 per cent. solution of cane sugar, and in a sterilized decoction of decaying vegetable matter.

These experiments prove that the fungus is by no means circumscribed in its choice of a matrix, and consequently it would be unwise, without further knowledge of the possibilities of the fungus, to spray its spores on fruit trees, as those spores, carried to the ground in the solution, would probably be able to develope as a saprophyte on decaying vegetable matter, and the resulting spores would be very likely to attack the partly matured fruit.

It remains to state that the fungus attacks and kills cockroaches quite as quickly as it does locusts. An exotic species—*Periplaneta Australasiæ*, abundant in the warm houses in Kew Gardens—was experimented upon. Four half-grown specimens were sprinkled with water containing the spores of the fungus in suspension, and

fed with bread mixed with mycelium and spores. Twelve hours afterwards the cockroaches were only just able to crawl slowly; one of the number that was allowed to remain undisturbed died shortly afterwards, and within two days was covered with a dense white mycelium which eventually produced sporangia.

The remaining three enfeebled specimens were placed along with a dozen newly captured full-grown specimens, who, as was expected, promptly ate up their weakly companions. Within 24 hours the whole of the cannibals were dead and becoming covered with the *Mucor*.

In the letter referred to it is stated that there is a suspicion that the Natal locust fungus of to-day is not the same as the species discovered by Cooper.

The following may explain this suspicion. A fungus called *Entomophthora Grylli*, Fres., has long been known as a parasite on various species of crickets and locusts. Some years ago specimens of a fungus attacking locusts in South Africa were sent to the British Museum, and it was suggested by Miss A. L. Smith in *Science Gossip*, June, 1895, that the fungus was an *Entomophthora*. Some months ago Mr. J. H. Hart, Superintendent of the Botanic Garden, Trinidad, sent to Kew for determination a culture said to have been prepared from an example of the "locust fungus" received from the Cape Bacteriological Institution. This example was not a pure culture, but certainly included *Entomophthora Grylli*, Fres.

It is quite possible that *E. Grylli* does occur as a parasite on the South African locust, and that it may have found its way into certain of the cultures, but it is equally certain that it is not *E. Grylli*, but the *Mucor* described above, that is the potent factor in the "locust fungus" prepared at the Cape.

The following is a description of the *Mucor*, which proves to be an undescribed species :—

Mucor exitiosus, *Massee*. *Mycelium* lanosum, niveum ; hyphæ sporangiferæ decumbentes, racemose ramosæ, sæpius septatæ. *Sporangia* globosa, atra, 60–100 μ diam. ; columella globosa vel obovata. *Sporæ* hyalinæ, ellipsoideæ, 5–6 × 3·5–4 μ. *Zygosporæ* ignotæ.

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6. The *Entomophthoreæ* of the United States ; Roland Thaxter, Mem. Boston Soc. Nat. Hist., iv., No. vi., 1888.
7. Report of the Director of the Colonial Bacteriological Institute for 1898 ; Cape of Good Hope, 1899, p. 84.
8. Brief report on Locust—Fungus imported from the Cape ; D. McAlpine ; N.S. Wales Agric. Gaz., x., Nov., 1899, p. 1213, and xi., March, 1900, p. 184.

Description of the Figures.

1–2. *Mucor exitiosus*, showing racemose and corymbose arrangement of the sporangia ; × 60.

3. Fertile branch bearing two sporangia ; *a*, entire, in optical section ; *b*, the sporangial wall and spores have disappeared, exposing the columella ; × 400.

4. A columella and base of sporangial wall ; × 400.

5. Spores ; × 400.

6. Spores germinating ; × 400.

7. Portion of vegetative mycelium immersed in the matrix, showing an irregularly swollen portion at *a* ; × 400.

8. Portion of a sporangial wall studded with minute crystals of lime ; × 800.

IV.—PLANT POISONOUS TO TREK OXEN IN TRANSVAAL.

The following correspondence gives all the available information as to a plant extremely fatal to oxen in the Northern Transvaal. Its deleterious properties appear to have been known locally for some time, but only recently to have attracted more general attention :—

WAR OFFICE to ROYAL BOTANIC GARDENS, KEW.

(116 Cape/1657.) War Office, London, S.W.,
8th November, 1900.

SIR,

I AM directed by the Secretary of State for War to forward for your consideration a report on the death of a number of trek oxen alleged to have been poisoned by eating certain plants while grazing in South Africa.

Specimens of (*a*) a poisonous plant, *Euphorbium* (reputed), and (*b*) a non-poisonous plant are enclosed, and the Secretary of State would be obliged if you would cause them to be examined and identified, and would be grateful for any information that may be forthcoming as to their alleged poisonous action.

I am, &c.,
(Signed) R. H. KNOX.

The Director,
Royal Botanic Gardens, Kew.

(Enclosure.)

To the PRINCIPAL VETERINARY OFFICER, SOUTH AFRICA.

"*Re* alleged poisoning of trek oxen, the result of eating certain plants when at the grazing grounds."

I have seen no cases myself, and am indebted to Veterinary Lieutenant Sawyer for the symptoms and post-mortem appearances. He states : "In the majority of cases progress is rapid ; often the first thing noticed is the animal halts, trembles for a few seconds, and drops dead. In cases less severe the animal is tympanitic, lies down, groans with pain, there is a green discharge from both nostrils, and symptoms of gastro-enteritis are present."

The conductors of ox transport state : There are no premonitory symptoms ; oxen drop dead suddenly in the yoke, or the herd may be grazing, all apparently well and feeding, when one or more will fall suddenly and die.

I am given to understand samples of the plants in question have been submitted for your inspection, further that you have had them examined and classified by an expert ; therefore any attempt on my part to presume to attempt a description of the plants is unnecessary, and would be out of place. I am told there are three varieties—two poisonous, the third, although of the same family, not dangerous. The leaves of the latter are white on the underside. They grow on the northern slopes of the Magaliesberg, the plants appearing prior to the grass, and are therefore more attractive to the cattle than would be the case later in the season. Wherever the wild Syringa flourishes these plants are abundant.

Stock owners state : Cattle reared locally will not touch the plants, but those brought from other districts readily partake of them.

From the foregoing statement it would appear there are no premonitory symptoms, consequently no treatment.

Avoid the northern slopes for grazing purposes ; when this is done the trouble ceases.

Conductor Cartwright states : If the oxen are allowed to drink freely prior to going to the grazing ground where these plants grow no bad results follow if the cattle partake of them. This may be so, but it seems unworthy of credence, inasmuch as cattle do not drink much—if at all—in the early morning. I know of no compulsory method to induce them to change their habits.

Post-mortem appearances :—

Lining membrane of rumen, reticulum, and omasum intensely inflamed and easily detached. Rumen contained a quantity of the leaves of the plants.

Lining membrane of abomasum also inflamed and of a dirty slate colour.

Intestines showed catarrhal inflammation.

All other organs healthy.

Taking into consideration the facts adduced : firstly, the animals, although suffering from acute gastritis associated with inflammation of the intestines, die without showing signs of pain; and, secondly, that there is no change in the secretions, or evidence of any deviation of health, death being sudden, I am of opinion the poison must be absorbed during the primary process of digestion ; its action is central, insensibility is produced, and death takes place by coma.

(Signed) F. W. SHARP,
Veterinary Captain, A.V.D.

Pretoria,
September 30, 1900.

D.G.A.V. Department.

Forwarded for your information. I also enclose specimens of the poisonous plants, together with specimens of leaves which are similar but innocuous.

(Signed) MATTHEWS,
Veterinary Colonel, P.V.O.S.A.

Pretoria,
October 1, 1900.

ROYAL BOTANIC GARDENS, KEW, to WAR OFFICE.

Royal Botanic Gardens, Kew,
November 12, 1900.

SIR,

I HAVE the honour to acknowledge the receipt of your letter of November 8 [116 (Cape) 1657] enclosing a report, herewith returned, on the death of a number of trek oxen alleged to have been poisoned by eating certain plants while grazing in South Africa, and asking for their identification and for information on the subject.

2. The specimen labelled *Euphorbium* is *Chailletia cymosa*. This is a native of the Transvaal. It belongs to a genus of which perhaps some score of species are known from Tropical Africa. Of one, *Chailletia toxicaria*, the seeds are used as a rat-poison in Sierra Leone.

3. The poisonous properties of *Chailletia cymosa* have only lately attracted attention. The only information in our possession is contained in the enclosed extract from the *Agricultural Journal* published by the Department of Agriculture for the Cape of Good Hope for November 9 last.

4. The non-poisonous plant, of which a specimen was sent, is *Parinarium capense*. A note in the Kew Herbarium states that it is a "low shrub growing on the flats resembling the poison shrub, but not it. Called the apple by the Boers."

I am, &c.,
(Signed) W. T. THISELTON-DYER.

Sir Ralph Knox, K.C.B.,
War Office, London, S.W.

(Enclosure.)

EXTRACT from *Cape Agricultural Journal*, Vol. XV., pp. 663–664.

Poisonous Herb (*Chailletia cymosa*, Hk.).

By Saturday's post I forwarded to your Department a small parcel of a poisonous herb which grows abundantly in this district and is very fatal to cattle and any kind of ruminant. It seems only to be dangerous at this time of the year, just after the young shoots come out of the ground and cattle are ravenous after any green herbage. I have just lost eleven head of cattle and my neighbour seven. It is the first season I have been on the place, and had not been warned of its whereabouts, so for safety sake had my cattle herded near the homestead, and unfortunately kept them on the only patch of poison on the farm. The first intimation of it I had was a cow making a few turns and dropping dead, and all the others died within 46 hours, or three days after eating the poison. Some, as I have said, drop dead without any sign of being sick; others have fits, as with strychnine; in most cases their legs become paralyzed and they won't walk, and the least excitement kills them. I may also mention that after death the inner coat of the stomach peels off as if it had been boiled, and the animal does not blow up until after-death, when it does to a great extent.

Zwartkop, Pretoria,
September 18.

L. N. BEAN.

The plant is *Chailletia cymosa*, Hk., figured in *Hooker's Icones Plantarum*, table 591, from Burke and Zeyher's Magaliesberg collections (Aapjes River). In 1890 I received the plant from Dr. Brock, a medical man residing in Pretoria, with an account of its deleterious effect upon stock.

Chailletia toxicaria, a species native to Sierra Leone, is used as a rat-poison. The root is the part employed.

The elimination of the poisonous principle, probably a glucoside, does not come within my purview.

P. MacOwan,
Government Botanist.

It would appear from the symptoms and post-mortem appearances presented by the stomach that the plant is a local irritant as well as a strong nerve stimulant, but without making any direct experiments it is impossible to do more than suggest a trial of such anodynes and sedatives as chloral hydrate in doses of half an ounce every six hours. Laudanum may also be tried, giving two ounces for the first dose, followed by one-ounce doses every two hours until the symptoms are relieved. Tincture of belladonna may also be tried in similar doses.

D. Hutcheon,
Colonial Veterinary Surgeon.

V.—RESEARCH IN JODRELL LABORATORY, 1876-1900.

The Royal Commission on Scientific Instruction and the advancement of Science, commonly spoken of as the Devonshire Commission, in its Fourth Report (1874), p. 10, expressed the opinion that "it is highly desirable that opportunities for the pursuit of investigations in Physiological Botany should be afforded at Kew to those persons who may be inclined to follow that branch of science." Effect was given to this recommendation by the liberality of the late T. J. Phillips Jodrell, Esq., M.A., who built and equipped the small laboratory, which has since borne his name, at his own expense (*Kew Report*, 1875, p. 2). It was completed and immediately brought into use in 1876 (*Kew Report*, pp. 28, 29).

It is necessary to explain that the Laboratory is not an educational institution. Its purpose is to afford facilities for research on material supplied by Kew. Those who conduct research in it are assumed, therefore, to be already conversant with its methods and to be capable of prosecuting their investigations with no more assistance than such friendly advice as the Kew Scientific Staff may be able to give them.

From 1876 to 1892 the Laboratory was under the general supervision of the Assistant Director (from 1885 Director). In 1892 (see *Kew Bulletin*, 1892, pp. 245, 246) Dr. H. Dukinfield Scott, F.R.S., accepted the post of Honorary Keeper.

During the period of its existence the Jodrell Laboratory has amply fulfilled the expectations of its founder. A continuous

stream of original work has emanated from it. Many of the researches have been of fundamental importance. Amongst those may be specified :—

Sir J. S. Burdon Sanderson, F.R.S., on the Electrical Phenomena accompanying movement in *Dionaea*.
Prof. Church, F.R.S., on Albinism.
Mr. Gardiner, F.R.S., on the Continuity of Protoplasm.
Dr. Schunck, F.R.S., on the Chemical Constitution of Chlorophyll.
Prof. Bower, F.R.S., on Apospory in Ferns.
Lord Avebury, F.R.S., on the Forms of Seedlings.
Mr. Massee, on the Sugar-cane Disease, and on "Finger and Toe."
Prof. Williamson, F.R.S., and Dr. Scott, F.R.S., on the Fossil Plants of the Coal Measures.
Mr. Horace Brown, F.R.S., and F. Escombe, on the Absorption of Carbon Dioxide by Plants.

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VI.—MISCELLANEOUS NOTES.

Mr. John Purcell Quinton, a member of the Gardening Staff of the Royal Botanic Gardens, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Curator of the Botanic Station, Sierra Leone.

Mr. Aage Engelbreth Casse, a member of the Gardening Staff of the Royal Botanic Gardens, has been appointed, on the recommendation of Kew, Director of the Plantations and Experimental Gardens in Hayti.

Messrs. James G. Duncan and George Douglas, members of the Gardening Staff of the Royal Botanic Gardens, have been appointed, on the recommendation of Kew, Assistants in St. George's Park, Port Elizabeth.

Maxime Cornu.—The death of this distinguished botanist has robbed Kew of a friend and correspondent of long standing. The Jardin des Plantes at Paris is part of a much larger organisation, the *Muséum d'Histoire Naturelle*. The horticultural side of it is the national botanical garden of France, and its head occupies the office in the larger establishment of *Professeur du Culture*. Between Cornu and his predecessors the most intimate relations had long subsisted with Kew. His death, which took place at Paris on April 3, at the early age of 57, severed prematurely a personal tie which had contributed greatly to the scientific interests of both institutions.

The hand of death has been heavy on the French botanical world. In recent years it has fallen successively on Duchartre, Baillon, Naudin, de Vilmorin and Franchet : all men in the foremost rank, whom their fellow-workers in England counted as sympathetic friends; and now the untimely and unexpected death of Maxime Cornu has come upon many of us—and not least at Kew—as a personal grief. I saw him last autumn in Paris full of the business of congresses into which he was throwing himself with irrepressible vivacity and energy. He had often complained of ill health, but nothing in his appearance had ever suggested to me ground for serious anxiety. I had hoped to induce him to pay us a visit this year. I could not go to his funeral. Nothing remains but the sad satisfaction of writing these lines to his memory.

Cornu was born July 16, 1843, at Orléans. The ability which he displayed in his schooldays seemed at first likely to be absorbed by studies on the literary side. But under the influence of his father and of his distinguished brother, Alfred Cornu, he devoted himself to mathematics, and with considerable success. He published in the *Nouvelles Annales de Mathématiques* papers on geometrical subjects. In my judgment there could be no better

preparation for a scientific career. Mathematics, as they are taught in France, habituate the mind to the grasp of general ideas and accustom it to rise from isolated facts to large generalisations. The descriptive side of science, it cannot be doubted, has a cramping influence, and it is the fate of too many of those who devote themselves to it to be unable "to see the wood for the trees." Cornu's mathematical studies, at any rate, decided him for a scientific career, and at the "Ecole normale supérieure" he eventually fixed on botany. He was for a time assistant to Duchartre, professor at the Sorbonne, a man remarkable in many ways, but possessing in a more than ordinary degree the power of presenting with French lucidity the results of current research, not forgetting those of English workers. While with Duchartre, Cornu produced in 1873, as his doctoral thesis, his well-known memoir on the *Saprolegniaceæ*, to which the Academie des Sciences awarded the Desmazières prize. From the Sorbonne he moved to the Muséum as aide naturaliste to Brongniart, whose daughter he afterwards married. Brongniart brought down to our own day the best traditions of that illustrious school of French botanists whose philosophic insight into the principles of plant morphology and taxonomy has probably never been rivalled, and certainly not surpassed.

Under Brongniart, Cornu devoted himself to mycology. He published in a comparatively brief period a profusion of papers, in which one is at a loss whether to admire most the untiring industry, the sagacity, or the wide range of his work. Everything pointed to his taking a foremost place in this branch of botany. But no one can be a mycologist without being drawn into the study of plant diseases, in which fungi play so large a part. Vegetable pathology early attracted Cornu, and he did much excellent work in it. We owe to him the principle, now so familiar as to seem almost obvious, of preventive treatment by the careful destruction by burning of the *débris* of plants which may harbour resting-spores.

In 1868 a mysterious disease made its appearance amongst the vines in the South of France. Planchon, the professor of botany at Montpellier (who owed his early training to Kew), discovered the cause in an insect—*Phylloxera vastatrix*—introduced from the New World. The injury which this ultimately inflicted on the principal cultural industry of France has been compared, and probably with justice, to that of the most devastating of wars. That France has risen triumphant above this, as above so many other disasters, is but one example of the indomitable courage of its people. Cornu, from his official position and special qualifications was necessarily at once absorbed in the task—hopeless as it seemed at first—of combating the scourge. For at least ten years, from 1872 onwards, he was occupied in little else. It is needless to enumerate the prominent positions in various inquiries which he filled; the most important was that of "Secrétaire de la commission académique du Phylloxera." His memoir on the whole subject published by the Academy has always seemed to me, for completeness and finish, a model of what such a research ought to be.

Cornu became the acknowledged authority on the subject of the Phylloxera. It had not been foreseen at first that the scourge,

when once emancipated from its American home, might, and probably would, invade every wine-growing country. There were those who thought it impossible that it could cross the Equator. The expectation was falsified, and, in spite of all precautions, it made its appearance at the Cape. I advised the Cape Government to have recourse to Cornu, and his services were as generously given as, I know, they were warmly acknowledged.

In 1884 Cornu succeeded Decaisne as Professor of Culture at the Museum—a position, if not so extensive in scope as that of the Director of Kew, scarcely less onerous. I had made Cornu's acquaintance some years before, and the circumstance of our similar official positions speedily brought us into closer intimacy. The position of an administrator under Government does not suit every temperament. The enthusiast must expect his ardour to be quenched with a good deal of official cold water. To Cornu, who had something of the engaging qualities of the *Méridional* this was hard to bear. My sympathy with him in his troubles, which were often not small, was certainly sincere, but I am afraid often seemed to him phlegmatic. In any case, the worries of administration pressed hardly on him, and, notwithstanding the counsels of common friends, diverted him from the scientific work which we all expected of him, and which his really brilliant powers entitled us to expect.

At the moment that Cornu entered on his new duties, France had turned its attention anew to the field in which, in the past, it had done so much—colonial enterprise. Cornu's ambition—and it was a legitimate one—was to utilise the somewhat dormant resources of the Jardin des Plantes in the work, much on the lines of Kew. For my part it was more than a pleasure to give him all the assistance in my power. Agriculture is the great civilising agency. To reduce nomadic and predatory tribes to cultural pursuits is perhaps one of the most effective of missionary enterprises. Cornu threw himself into the work with little short of passion. What he accomplished, both for the French colonies and for the enrichment of the gardens of his own country, with resources more limited than we have at our disposal in England, is to me surprising. But, unhappily, at the moment when he had attained some measure of success his forces failed him, and he was not allowed to see his work fully crowned with accomplishment.

Cornu was the most loyal of Frenchmen. Had he been less so, he would not have sacrificed to the interests of France the career he might have devoted to science. I cannot but fear that while he lived the sacrifice he made was not fully appreciated. Many of us have wondered that a man who had done so much had never been admitted to the Institute. But that recognition could not have been long delayed, and this adds another regret to his untimely death.

W. T. T. D.

Botanical Magazine for February. — *Agave Peacockii*, from Central Mexico, is now figured for the first time. The Kew plant, which flowered in the Palm House in December, 1899, and produced a scape, measuring, with the inflorescence, 14½ feet, is the

type specimen from the collection of the late Mr. Peacock, of Hammersmith. *Neillia Torreyi* is a rosaceous shrub which is widely distributed in North America, ranging from British Columbia, along the Rocky Mountain region, to New Mexico. The form figured has been called *N. malvacea*, and chiefly differs from the type in having fruits of 2 or 3 carpels instead of 1 or 2. The Kew plant was received from Professor Sargent, Director of the Arnold Arboretum. *Veronica glauca*, a native of Greece, where it grows in sandy fields, is a pretty, free-flowering annual, of which seeds were received from Hon. Charles Ellis, of Frensham Hall, Haslemere. Its flowers, though smaller than in wild specimens preserved in the Herbarium, were three-fourths of an inch in diameter. *Echidnopsis Bentii* is one of the succulent Asclepiadaceae. It was found by the late Mr. Theodore Bent in Southern Arabia, and was sent by him to Kew shortly before his death. *Rosa Seraphini* is closely allied to *R. agrestis*. It is a dwarf species with rather small flowers of a bright rose-colour, and is a native of Italy, Corsica, Sardinia, and Sicily. Seeds from which the Kew plants were raised were obtained from the Innsbrück Botanic Gardens.

Botanical Magazine for March.—*Hymenocallis schizostephana* is a distinct species, with fragrant flowers, from Brazil, a bulb of which was presented to the Royal Gardens by A. Worsley, Esq., of Isleworth. The perianth tube is green, $2\frac{1}{2}$ inches long, and its narrow, white segments are rather longer. *Modecca senensis*, from Mozambique and Delagoa Bay, is a unisexual climbing plant belonging to the Passifloraceae. The specimen figured is from a male plant which was raised from seeds communicated by Mrs. Monteiro, in 1884. Its flowers are fragrant. *Coelogyne Veitchii* was collected in Western New Guinea by Mr. Burke for Messrs. James Veitch & Sons, of Chelsea, by whom a plant was presented to Kew. It is a distinct species with long pendulous racemes of white flowers. *Kalanchoe Bentii* is a fine new species from the Hadramaut district of Southern Arabia, where seeds were collected by the late Mr. J. Theodore Bent. Its flowers are an inch and a half long, white, with pink on the unexpanded corolla-lobes. The Kew plant has a stem three feet high. Its leaves are thick, dagger-shaped, spreading and recurved, in form differing from all other species. *Masdevallia deorsum*, a native of New Grenada, is remarkable in having a strictly pendulous habit. Its flowers are comparatively large, yellow, blotched with bright red. The figure was prepared from a specimen grown in the garden of Sir Trevor Lawrence, Bart.

Botanical Magazine for April.—*Cladrastis tinctoria* is one of the rarest trees of the Eastern United States, where it is known as the yellow or Gopher wood. The specimen drawn was obtained from a large tree growing in the Royal Gardens. *Amorphophallus leonensis* is a native of Western tropical Africa, whence tubers were sent to Kew by Mr. Walter Haydon, Curator of the Botanic Station, Sierra Leone. Four varieties are known in cultivation.

The plant produces a very stout peduncle from three to eight inches high, bearing an erect, pyriform spathe, the predominating colour of which is purple. Its spadix is much thickened towards the top and nearly fills the mouth of the spathe, which it slightly exceeds in length. *Kalanchoe farinacea*, from Socotra, was raised from seeds sent to Kew by the late Mr. J. Theodore Bent, in 1897. It has large, entire, obovate leaves, and flowers three-quarters of an inch long, yellow and bright scarlet. *Rosa fedtschenkoana*, from the Turkestan and Kokan regions of Central Asia, has handsome white flowers with an unpleasant odour. The calyx is coated with red glandular hairs. Kew obtained a plant of this species from Mr. T. Smith, of Newry. *Stapelia nobilis* is an exceedingly fine new species closely allied to *S. gigantea*. It was sent to Kew by Mr. T. G. Griffiths, of Port Elizabeth.

Botanical Magazine for May.—*Wyethia mollis*, from California, is a stout perennial herb with large heads of golden-yellow flowers. The genus closely approaches *Helianthus*, but differs in having fertile ray-florets and a pappus of a few, unequal, rigid, persistent bristles. The specimen drawn was grown in the garden of the Rev. Canon Ellacombe, of Bitton. *Pyrus alnifolia*, native of Japan and China, is a small tree with white flowers about half an inch in diameter, and ellipsoid or subglobose, bright-red fruits. A plant of this, which flowered in the Kew Arboretum in May, 1900, was purchased from Mr. L. Späth, of Berlin. *Lonicera pyrenaica* is an old inhabitant of British gardens, having, according to Philip Miller, been cultivated in England since 1793. It grows at Kew in the Rock Garden, where it forms a small shrub and flowers freely in May and June. *Mesembryanthemum calamiforme* was figured from a specimen sent to Kew by Mr. Chalwin, Superintendent of the Cape Town Botanic Gardens. It has thick cylindric leaves 2 to 3 inches long, and rather large terminal flowers with white and pink petals. The beautiful *Manettia bicolor*, from Brazil, is a well-known stove-climber, and has been in cultivation at Kew for many years.

Hooker's Icones Plantarum.—The concluding part of the seventh volume of the fourth series (plates 2676–2700) was issued in February. It opens with a continuation of plates illustrating rubber-yielding plants. The first is *Castilloa australis*, Hemsl., a native of Peru; but the exact locality is unknown. It is not unlike the original *C. elastica*, Cerv., and *C. Tunu*, Hemsl., represented by plate 2651; but it is quite distinct. *Castilloa* is one of the genera now much engaging the attention of travellers and merchants interested in the caoutchouc trade. The new *Journal d'Agriculture Tropicale*, especially, has taken up the subject very warmly. Eight more plates illustrate the genus *Sapium*. Among the species figured is *S. suberosum*, Muell. Arg., a native of Barbados. The drawing was made from the type in the Berlin herbarium, obligingly lent for the purpose by Dr. A. Engler, the Director of that establishment, who also

presented a specimen of this interesting tree. Kew possessed no specimen of a *Sapium* from Barbados, and no specimen belonging to the species in question. *S. ciliatum*, Hemsl., a native of North Brazil, collected both by Spruce and Trail, and referred to as a rubber-tree, is remarkable in having conspicuously ciliated leaves. The flowers are unknown.

Besides these rubber-trees belonging to the *Euphorbiaceæ*, a number of the *Apocynaceæ* are figured, including the new genus *Funtumia*, Stapf, founded upon African species formerly referred to *Kickxia*, a Malayan genus. *Funtumia elastica* and *F. africana* are the species figured.

Habenaria repens, Nutt. is noteworthy as one of the few aquatic orchids. It is widely spread in America, from South Carolina and Florida to Guatemala, Nicaragua, and throughout the West Indies to Guiana and South Brazil. Few orchids have anything approaching such a range of distribution. *Itoa orientalis*, Hemsl., a new genus of *Biraceæ* related to *Idesia* and *Carriereæ* is dedicated to the recently deceased Dr. Keisuké Ito, one of the pioneers of modern botany in Japan, and to Dr. Tokutaro Ito, his grandson, who formerly studied at Kew, and enriched the library by the gift of rare Japanese books on botany. *Gymnopodium*, Rolfe (*Polygonaceæ*), is a new genus allied to *Podopterus*.

Vegetable Fibres.—The papers relating to this subject, which have from time to time appeared in the *Kew Bulletin*, were collected in 1898, in a volume forming *Additional Series, II.* The impression, for a purely technical publication of the kind, has been somewhat rapidly exhausted, and has for some time been out of print. A new impression has therefore been issued, and is now on sale by His Majesty's Stationery Office.

Plants presented to the Herbarium during 1900.—Dr. Korshinsky, 616 sheets of Russian plants; Dr. A. Zahlbruckner, Cryptogamæ Austro-Hungaricæ; Mr. G. Gautier, continuation of Hieraciotheca Gallica et Hispanica; Rev. G. E. Post, fascicles 8 and 9 of Plantæ Postianæ; Dr. V. F. Brotherus, 134 mosses from Turkestan and 35 from New Guinea, etc.; Mr. F. Stephani, specimens of 23 new species of *Metzgeria*; Dr. A. Henry, 1,330 specimens from Szemao, Yunnan, and 500 from Kwangsi, collected by Mr. H. B. Morse; Miss F. M. Reid, 117 specimens from Kiukiang; Mr. St. George Littledale, a collection from Kamtchatka and the Amur River; Prof. Kingo Miyabe, 119 *Erysiphaceæ* from Japan, received through Mr. E. S. Salmon; Major D. Prain, 327 *Myrtaceæ* and 62 *Sonerileæ* from the Malay Peninsula, and 134 miscellaneous Indian plants; Mrs. A. Gnosspelius and Mrs. I. L. Pain, the Himalayan herbarium of the late Mr. J. E. Winterbottom, consisting of about 1,500 specimens; Mr. J. F. Duthie, a large series of specimens of *Impatiens* from Northern India; Mr. C. Curtis, collections from Penang, including 62 rubber-yielding plants; Mr. H. N. Ridley,

collections from Singapore, etc.; Prof. A. Haddon, Malay Peninsula; Dr. M. Raciborski, 100 Cryptogamæ Parasiticæ, from Java; Mr. T. F. Cheeseman, 25 specimens from Rarotonga; Mr. E. Cheel, 35 Lichens from the neighbourhood of Sydney, New South Wales. African plants were presented by Mr. A. Whyte, who sent 1,500 specimens from Uganda; Archdeacon Johnson, 327 from Nyasaland; Sir G. C. Denton, 62 from Lagos; Messrs. W. H. Johnson and J. H. Holland, several collections from the West Coast; Mr. K. J. Cameron, 46 from Namasi, British Central Africa; the Hon. Mrs. Evelyn Cecil, 255 from Rhodesia; Prof. H. Schinz, 55 from German South-West Africa; Major Wolley Dod, 57 specimens, chiefly ferns, from the Cape Peninsula. A small collection made in the Cape Verde Islands by Mr. F. Newton was received from Mr. Isaac Newton. North and Central American collections have been received from Dr. N. L. Britton, the secretary of the Smithsonian Institution, Dr. M. Micheli, and Mr. E. J. Campbell. A small collection of Trinidad plants were sent by Mr. F. A. Lodge, and seeds and specimens of various species of *Hevea* from British Guiana, by Mr. G. S. Jenman. Mr. E. S. Salmon has presented various collections of *Erysiphaceæ* used by him in his monograph of the group, and numerous mosses.

Presentations to the Library during 1900.—Prof. G. Arcangeli, several papers on Italian Fungi; Mr. F. M. Bailey, two parts of his *Queensland Flora*; Dr. A. Baldacci, various papers, including one on the structure of the leaf and stem of the new *Forsythia europaea*; the Netherlands Minister, continuation of the late Dr. Boerlage's *Handleiding tot de kennis der flora van nederlandsch Indië*; Dr. H. Christ, several papers on Ferns, and a copy of his work, *Die Farnkräuter der Schweiz*; Dr. L. Errera, papers by himself, and others by the late Dr. Clautriau; Prof. P. Fliche, three papers on fossil plants; Dr. Otto Appel, a set of pamphlets by the late Dr. Knuth; Sir J. D. Hooker, part 5 of the *Handbook of the Flora of Ceylon*, and numerous pamphlets, and periodicals in continuation; *Icones Floræ Japonicæ*, part 1, from the College of Science, Imperial University of Tokyo; *Phanerogamæ et Pteridophytæ Japonicæ*, etc., from the editor, Mr. T. Makino; *Cryptogamæ Japonicæ*, etc., from Dr. Matsumura and Dr. Miyoshi; Dr. Lindman, his works on the *Leguminosæ* and Palms of South America; Prof. F. Niedenzu, the continuation of his valuable series of papers on the *Malpighiaceæ*; Dr. O. Penzig, numerous papers, including his *Flora Ligustica synopsis* and his *Flora popolaire Ligure*; Miss J. R. Perkins, a copy of her *Monographie der Gattung Mollinedia*; Sir Ernest Satow, *The Cultivation of Bamboos in Japan*; Prof. Lester F. Ward, *The Cretaceous Formation of the Black Hills*, etc.; *Journal of the Department of Agriculture of Western Australia*, from the Secretary; *Annual Reports of the Watson Botanical Exchange Club*, 1887–1900, from the Secretary; Dr. D. H. Scott, *Studies in Fossil Botany*; The Trustees of the British Museum, *Botany of Cook's First Voyage*, part 1, and *Catalogue of Welwitsch's African Plants*, part 4; Dr. G. W. Parker, a manuscript catalogue of plants from Guiana

and adjacent countries, compiled by himself. Among the numerous presentations by the Bentham Trustees are a complete set of the *Reports of the British Association for the Advancement of Science*; a valuable manuscript of the *Ortus Sanitatis*, another of Macer and Pseudo-Apulejus; a copy of the rare first edition of the *Herbarius*, dated 1484; a large quarto edition of *Le Grant Herbier*, circa 1517; Hill's *Profitable Arte of Gardening*, 1574; Leeuwenhœk's *Arcana Naturæ*, editions 1 and 3; and the continuation of about 20 serial publications.

The foregoing list does not include numerous reprints and extracts presented by their respective authors, nor the periodicals received in exchange for the *Kew Bulletin*.

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

Nos. 175-177.] JULY—SEPTEMBER. [1901.

I.—DIAGNOSES AFRICANÆ, XIII.

698. **Rhopalandria lobata**, *C. H. Wright* [Menispermaceæ]; a *R. Cumminsii*, Stapf, et *Dioscoreophyllo strigoso*, Engl. (an *Rhopalandriæ* species ?), foliis trilobatis hispidis recedit.

Caulis scandens, sulcatus, setis 2 lin. longis vestitus. *Folia* trilobata, utrinque hispida, 3 poll. longa, 3 poll. lata, lobis acuminatis, marginibus ciliatis; petioli $2\frac{1}{2}$ poll. longi, tenues, setis præditi. *Pedunculus* 3 poll. longus, dense setosus; racemus 3 poll. longus, floribus fasciculatis; bracteæ 1 lin. longæ, apice setosae, ramentaceæ; pedicelli $1\frac{1}{2}$–2 lin. longi. *Sepala* flava, oblonga, obtusa, $1\frac{1}{2}$–2 lin. longa, $\frac{3}{4}$ lin. lata. *Stamina* generis. *Flos* ♀ ignotus. *Fructus* ruber (fide *Johnson*).

GOLD COAST. *W. H. Johnson*, 102.

Including the above, two species of *Rhopalandria* are known both from male specimens. Four species of Engler's genus *Dioscoreophyllum* are known, two from male and two from female plants. It is very probable that further material will shew that they are congeneric.

699. **Hugonia obtusifolia**, *C. H. Wright* [Linaceæ]; affinis *H. platysepalæ*, Welw., sed foliis obtusis nervis paucioribus differt.

Frutex scandens. *Folia* obovato-lanceolata, obtusa, subcrenata, glabra, $5\frac{1}{2}$ poll. longa, $2\frac{1}{2}$ poll. lata, nervis utrinque 10–12; petiolus 5 lin. longus. *Racemi* pauciflori ad axillas foliorum superiorum; pedicelli 2 lin. longi; bracteolæ subulatæ. *Sepala* 2 exteriora ovata, $1\frac{1}{2}$ lin. longa, extus rufo-pubescentia, 3 interiora rotundata, membranacea, glabra, $2\frac{1}{2}$ lin. longa. *Petala* obcordata, flava, 6 lin. longa, 4 lin. lata, ante anthesin extus rufo-pubescentia. *Filamenta* 2 lin. longa; antheræ rotundatæ. *Ovarium* rufo-pubescens; styli 5 lin. longi.

CAMEROONS. Batanga, *Bates*, 330.

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700. **Geranium Brycei**, *N. E. Brown* [Geraniaceæ]; affine *G. cinereo*, Harv., sed caule fruticoso stipulis multo majoribus distinguitur.

Frutex 4–5-pedalis, ramulis retrorsum albo-villosis. *Folia* palmatisecta, petiolata, superiora 1 poll. diam. (inferiora non vidi), supra appresse sericeo-pubescentia, subtus albo-tomentosa; segmenta 5, subbipinnatifida; stipula 5–6 lin. longa, 3–4-fida, segmentis lineari-lanceolatis acutis. *Pedunculi* $1\frac{1}{4}$–2 poll. longi, 1–2-flori; pedicelli $\frac{3}{4}$–$1\frac{1}{4}$ poll. longi. *Sepala* 3–$3\frac{1}{2}$ lin. longa, $1\frac{1}{2}$ lin. lata, oblonga, mucronata. *Corolla* 10 lin. diam., cœruleo-purpurea.

South Africa. Basutoland, on Machacha Mountain, in a moist kloof, alt. 9500 ft., *Right Hon. J. Bryce.*

701. **Geranium multisectum**, *N. E. Brown* [Geraniaceæ]; proximum *G. incano*, Linn., sed foliis minoribus et pedicellis glandulosis distinguitur.

Herba 4–5 poll. alta, minute appresse pubescens. *Folia* 5-8 lin. diam., palmatipartita; segmenta bipinnatipartita, lobulis $\frac{3}{4}$–$1\frac{1}{2}$ lin. longis $\frac{1}{4}$–$\frac{1}{2}$ lin. latis linearibus subobtusis; petioli 1–$1\frac{1}{2}$ poll. longi. *Pedunculi* $1\frac{1}{2}$–$3\frac{3}{4}$ poll. longi, plerumque 2-flori; pedicelli 6–12 lin. longi. *Sepala* 3 lin. longa, $1\frac{1}{4}$ lin. lata, oblonga, mucronata. *Corolla* 10–11 lin. diam., rubro-purpurea.

South Africa. Basutoland: Machacha Mountain, alt. 9000 ft., *Right Hon. J. Bryce.*

702. **Buchenrœdera glabriflora**, *N. E. Brown* [Leguminosæ-Genisteæ]; affinis *B. tenuifoliæ*, Eckl. & Zeyh., sed calycis dentibus brevioribus et corolla glabra differt.

Frutex humilis, ramulis foliisque argenteo-sericeis. *Folia* brevissime petiolata, trifoliolata; foliola 2–3 lin. longa, $\frac{1}{4}$ lin. crassa, tereti-subulata, supra angustissime canaliculata; stipulæ nullæ. *Flores* 2–3 ad apices ramulorum brevissimorum fasciculati. *Pedicelli* 1 lin. longi, sericeo-pubescentes. *Calyx* campanulatus, subæqualiter 5-dentatus, subtomentosus; tubus $1\frac{1}{2}$ lin. longus; dentes vix $\frac{1}{2}$ lin. longi, late deltoidei, acuti. *Corolla* purpurea, glabra; vexillum $4\frac{1}{2}$ lin. longum, 4 lin. latum, orbiculatum, unguiculatum; alæ 4 lin. longæ, $1\frac{1}{2}$ lin. latæ, oblongæ, obtusæ, unguiculatæ; carina $4\frac{1}{4}$ lin. longa, $1\frac{1}{2}$ lin. lata, obtusa. *Legumen* immaturum villosum.

Cape Colony. Queenstown Division: mountain sides near Queenstown, alt. 4000 ft., *Galpin*, 1596.

703. **Melolobium Burchellii**, *N. E. Brown* [Leguminosæ-Genisteæ]; affinis *M. collino*, Eckl. & Zeyh., sed ubique patule pubescens, et foliolis haud emarginatis differt.

Frutex humilis, ramosus, spinescens, ubique corolla excepta dense patule pubescens, eglandulosus. *Rami* subelongati, graciles, ascendentes. *Folia* trifoliolata, petiolata; petiolus 1–2 lin. longus, subteres, supra canaliculatus; foliola $1\frac{1}{4}$–3 lin. longa, $\frac{1}{2}$–1 lin.

lata, obovata, obtusa, minute subapiculata, plus minus complicata ; stipulæ 1 lin. longæ, $\frac{1}{2}$–$\frac{2}{3}$ lin. latæ, oblique affixæ, ovatæ vel semi-hastatæ, acutæ. *Flores* 2–3 prope apices ramulorum laxe racemosi, brevissime pedicellati, bracteati, pedicellis bibracteolatis. *Bracteæ* $1\frac{1}{4}$–$1\frac{1}{2}$ lin. longæ, $\frac{1}{2}$–$\frac{2}{3}$ lin. latæ, ovato-lanceolatæ ; bracteolæ bracteis subæquilongæ, sed angustiores. *Calyx* bilabiatus ; tubus $1\frac{1}{3}$ lin. longus ; labium superius ad medium bifidum, dentibus subfalcatis acutis ; labium inferius concavum, apice trifidum, dentibus angustis acutis. *Corolla* glabra, lutea ; vexillum 3 lin. longum, $1\frac{1}{2}$–$1\frac{3}{4}$ lin. latum, orbiculatum, unguiculatum ; alæ 3 lin. longæ, $\frac{2}{3}$ lin. latæ ; carina $2\frac{1}{3}$ lin. longa, obtusa. *Legumen* 5 lin. longum, $1\frac{1}{2}$ lin. latum, oblongum, pubescens.

Cape Colony. Colesberg Division : at Naauw Poort, *Burchell*, 2776.

704. **Crotalaria minor**, *C. H. Wright* [Leguminosæ-Genisteæ] ; *C. natalitiæ*, Meissn., proxima, sed omnibus partibus minor.

Caulis leviter striatus, primum pubescens, tandem glaber. *Folia* digitatim trifoliolata ; foliola obcuneata, 4–6 lin. longa, supra glabra, subtus ad costam appresse hirsuta. *Flores* ad apices ramorum lateralium racemose dispositi ; pedicelli 1 lin. longi. *Calyx* campanulatus, extus sparse pilosus, 2 lin. longus ; lobi subulati. *Corolla* alba ; carina 4 lin. longa. *Stamina pistillumque* generis.

British Central Africa. Shiré Highlands, Mount Mlanji, *Mahon*.

705. **Vigna nuda**, *N. E. Brown* [Leguminosæ - Phaseoleæ] ; species insignis, aphylla.

Herba 6–8 poll. alta, basi ramosa, aphylla. *Caules* $\frac{3}{4}$–$3\frac{1}{2}$ poll. longi, erecti. *Pedunculi* sæpe radicales, $1\frac{3}{4}$–7 poll. longi, erecti, minute et parce retrorsim pubescentes, 2–3-flori. *Pedicelli* $\frac{1}{2}$–1 lin. longi. *Calyx* $3\frac{1}{2}$ lin. longus, late campanulatus. 5-dentatus, parce puberulus ; dentes 1–$1\frac{1}{4}$ lin. longi, deltoidei, acuti. *Corolla* 9–10 lin. longa ; vexillum suborbiculare, 1 poll. latum ; carina valde incurva, obtusa.

Rhodesia. Mashonaland, abundant in dry pastures, *Right Hon. J. Bryce*.

706. **Cliffortia alata**, *N. E. Brown* [Rosaceæ-Potericæ] ; a speciebus reliquis fructu alato distincta.

Frutex 1–$1\frac{1}{2}$ ped. altus, ramosus. *Folia* fasciculata, trifoliolata, minute pubescentia ; foliola 2–4 lin. longa, $\frac{1}{3}$ lin. crassa, teretia, submucronulata. *Flores* axillares, brevissime pedicellati ; sepala floris masculini $1\frac{2}{3}$ lin. longa, 1 lin. lata, elliptica, subacuta, apice intra villoso-callosa, extra glabra : sepala floris feminei similia sed minora. *Fructus* 3–4 lin. longus, 3–$3\frac{1}{2}$ lin. latus, ellipticus, utrinque emarginatus, late bialatus, faciebus cristato-carinatus, albo-tomentosus.

Cape Colony. Riversdale Division : on the Karoo plains at Muis Kraal, near Garcias Pass, alt. 1000 ft., *Galpin*, 3925.

707. **Cliffortia Galpini**, *N. E. Brown* [Rosaceæ - Potericæ]; similis *C. juniperinæ*, Linn. f., sed foliis brevioribus supra planis nec canaliculatis differt.

Frutex dioicus, dense ramosissimus, ramis adscendentibus cinereis. *Folia* ad apices ramulorum fasciculata, sessilia, trifoliolata; foliola $1\frac{1}{2}$–4 lin. longa, $\frac{1}{4}$ lin. lata, linearia, mucronata vel acuta, supra plana, dorso obtuse carinata, minutissime serrulata, glabra. *Flores* sessiles, terminales. *Sepala* floris masculi $1\frac{1}{2}$ lin. longa, $\frac{2}{3}$ lin. lata, sepala floris feminei $\frac{2}{3}$ lin. longa, $\frac{1}{3}$–$\frac{1}{2}$ lin. lata, elliptica vel elliptico-ovata, mucronata, glabra. *Stamina* $1\frac{3}{4}$ lin. longa; filamenta filiformia; antheræ didymæ, loculis oblongis. *Ovarium* obovoideum, glabrum.

Cape Colony. Queenstown Division: Hangklip and Andriesberg Mountains, alt. 6000–6700 ft., *Galpin*, 1607.

708. **Crassula variabilis**, *N. E. Brown* [Crassulaceæ]; *C. pyramidali*, Thunb., arcte affinis, sed floribus albis et foliis variabilibus differt.

Planta 3-6 poll. alta, basi ramosa. *Folia* variabilia, 4-faria, dense imbricata vel 1–3 lin. distantia, erecta vel patentia, sessilia, leviter connata, nunc $1\frac{1}{2}$–2 lin. longa, 1–2 lin. lata, ovata, obtusa, turgida, nunc 2–4 lin. longa, 2–$3\frac{1}{2}$ lin. lata, deltoideo-ovata, acuta, plana vel turgida, viridia, marginibus plus minus brunnea et minutissime papillato-ciliata. *Cymæ* parvæ, capituliformes, 5–7 floræ, subsessiles vel breviter pedunculatæ, in paniculam angustam subspiciformem terminalem usque 3–4 poll. longam $\frac{3}{4}$–1 poll. diam. dispositæ, vel interdum subcorymbosæ. *Flores* sessiles, conferti. *Bracteolæ* 1–$1\frac{1}{3}$ lin. longæ, oblongæ, obtusæ, turgidæ, minutissime ciliatæ. *Sepala* 1 lin. longa, oblonga, obtusa, turgida, minutissime ciliata. *Corolla* $2\frac{1}{2}$–3 lin. longa, gamopetala, usque ad medium 4–5-loba; lobi lineares, vix $\frac{1}{2}$ lin. lati, subobtusi, recurvi, albi vel extra rubri. *Stamina* 5, inclusa; filamenta $\frac{1}{4}$ lin. longa, prope apicem tubi affixa; antheræ $\frac{1}{3}$ lin. longæ, oblongæ, luteæ. *Glanduiæ* hypogynæ, $\frac{1}{4}$ lin. longæ, spathulatæ, apice rotundatæ, bilobæ vel bicrures.

Cape Colony. In the Karoo at Matjes Fontein, *MacOwan*. Described from living plants sent to Kew by Prof MacOwan in 1898.

709. **Cassipourea schizocalyx**, *C. H. Wright* [Rhizophoraceæ]; arbuscula, foliis ovatis acuminatis, calyce fere ad basin diviso.

Rami teretes, glabri. *Folia* $5\frac{1}{2}$ poll. longa, $2\frac{3}{4}$ poll. lata, supra glabra, subtus ad costas appresse pilosa; petiolus 6 lin. longus; stipulæ deciduæ, interpetiolares, deltoideæ, 4 lin. longæ. *Flores* 1–3 ad axillas ramulorum. *Calycis* lobi ovati, acuti, valvati, intus sericei. *Petala* 5, spathulata, lacerata, alba, fugacissima; laciniæ inflexæ. *Stamina* plurima; filamenta filiformia; antheræ oblongæ, pilosæ. *Ovarium* triloculare, extus sericeum; stylus teres; ovula in quoque loculo 2, pendula.

Gaboon Region. Mfoa, *Bates*, 514.

710. **Pentas Wyliei**, *N. E. Brown*, [Rubiaceæ-Hedyotideæ]; affinis *P. carneæ*, Benth., floribus multo minoribus differt.

Herba elata, ramosa. *Caules* tenuiter subvillosi, internodiis elongatis. *Folia* petiolata, $3\frac{1}{2}$–$4\frac{1}{2}$ poll. longa, $\frac{3}{4}$–$1\frac{1}{2}$ poll. lata, late lanceolata, acuta, utrinque tenuiter pubescentia. *Stipulæ* 5–7-setosæ, villosæ. *Cymæ* terminales, $\frac{3}{4}$–1 poll. diam. vel fructu maturo 1–$1\frac{3}{4}$ poll. diam. *Calycis* lobi valde inæquales, 1–3 lin. longi, $\frac{1}{3}$–$\frac{2}{3}$ lin. lati, majores lanceolati, acuti. *Corolla* alba; tubus 3–4 lin. longus, superne ampliatus, fauce villosus; lobi vix $1\frac{1}{2}$ lin. longi, ovati, subacuti. Stamina inclusa. Capsula 2 lin. longa et lata, 8-nervosa, apice dehiscens. Semina numerosa, angulata, minute reticulata.

South Africa. Zululand, at Ungoya, alt. 1000–2000 ft., *Wylie in Herb. Wood*, 7590.

711. **Randia purpureomaculata**, *C. H. Wright* [Rubiaceæ-Gardenieæ]; ex affinitate *R. octomeræ*, Benth. et Hook. f. a qua calycis lobis ovatis et corollæ tubo latiore differt.

Frutex scandens, 10–12 ped. altus. *Ramuli* teretes, appresse hirsuti. *Folia* obovata, breviter acuminata, 4 poll. longa, 2 poll. lata, supra glabra, subtus ad nervos hirsuta; petioli 2 lin. longi; stipulæ e basi lata subulatæ. *Flores* ad ramulorum apices solitarii. *Calyx* 2 poll. longus, extus sparse hirsutus; lobi ovati, acuminati, 6 lin. lati. *Corolla* luteola, purpureomaculata; tubus $3\frac{1}{2}$ poll. longus, extus dense et apprese hirsutus; lobi 5–7, oblongi, plus minus acuminati. *Antheræ* 1 poll. longæ, paullo exsertæ. *Stylus* breviter hirsutus; stigma clavatum, 1 poll. longum.

West Africa. Old Calabar, *Holland*, 8.

712. **Felicia lutea**, *N. E. Brown* [Compositæ-Asteroideæ]; ab omnibus speciebus ligulis luteis facile distinguitur.

Herba perennis, $\frac{1}{2}$–1 ped. alta, ramosa. *Caules* erecti, patule pubescentes. *Folia* alterna et opposita, plerumque 5–7 lin. longa, $\frac{3}{4}$–$1\frac{1}{2}$ lin. lata, majora usque $1\frac{1}{4}$ poll. longa, 2–3 lin. lata, sessilia, linearia vel oblanceolata, obtusa, basi plus minus attenuata, utrinque patule pubescentia, vel inferiora supra subglabra. *Pedunculi* terminales, solitarii, monocephali, $1\frac{1}{2}$–$2\frac{1}{2}$ poll. longi, patule pubescentes. *Capitula* $\frac{1}{2}$ poll. diam. *Involucri* squamæ 2-seriatæ, subæquales, 2 lin. longæ, $\frac{1}{3}$–$\frac{1}{2}$ lin. latæ, lanceolatæ, acutæ. *Ligulæ* luteæ, $1\frac{1}{2}$ lin. longæ, lineares, obtusæ. *Flores disci* $1\frac{1}{2}$ lin. longi, tubulosi, 5-dentati, lutei. *Pappi* setæ scabridæ, 1-seriatæ. *Achænia* obovata, valde compressa, marginata, parce pubescentia.

South Africa. Zululand, at Amatikulu, below 1000 ft., *Wylie in Herb. Wood*, 7592.

This plant undoubtedly belongs to the genus *Felicia*, but is the only one yet recorded in which the ray-florets are yellow. In appearance it resembles *F. erigeroides*, *DC.*, but it is not so woody.

713. **Helichrysum plantaginifolium**, *C. H. Wright* [Compositæ-Inuloideæ]; *H. quinquenervi*, Less., affine, differt foliis longe petiolatis subtus tenuiter albo-arachnoideis supra sublævibus.

Caulis erectus, suffruticosus, striatus, tenuiter albo-arachnoideus, 3–4-pedalis. *Folia* late ovato-lanceolata, basi rotundata, deinde in petiolos decurrentia, 5–7-nervia, subtus tenuiter albo-arachnoidea, supra glabrescentia, marginibus scabris, 6 poll. longa, 4 poll. lata ; petioli 6 poll. longi, alati. *Capitula* pluria, corymbosa, 3 lin. diam. ; bracteæ oblongæ, obtusæ, dilute flavæ.

British Central Africa. Namasi, *Cameron*, 6.

714. **Macowania glandulosa**, *N. E. Brown* [Compositæ-Inuloideæ] ; *M. revolutæ* Oliv. similis, differt foliis supra glabris glanduloso-punctatis.

Frutex ramosus, ramis parce arachnoideis et piloso-glanduliferis. *Folia* 6–13 lin. longa, $\frac{3}{4}$–1 lin. lata, ascendentia, sessilia, linearia, acuta, supra glabra, glanduloso-punctata, subglutinosa, subtus albo-tomentosa, marginibus revolutis. *Capitula* solitaria, terminalia, sessilia, 9–10 lin. diam., multiflora, radiata. *Involucri* campanulati bracteæ 4-seriatæ, lineares, acuminatæ, subciliolatæ, dorso glanduloso-pubescentes et viscidæ, apice fusco-maculatæ ; interiores 5 lin. longæ, $\frac{2}{3}$–$\frac{3}{4}$ lin. latæ ; exteriores gradatim minores. *Receptaculum* convexum, alveolatum. *Flores radii* 20–24, uniseriati ; corolla 6 lin. longa, 1 lin. lata, lineari-ligulata, apice minute bifida, involucrum excedens, lutea. *Flores disci* numerosi ; corolla 3–3¼ lin. longa, tubulosa, superne ampliata, breviter 5-dentata, glabra, lutea, *Antheræ* caudato-sagittatæ. *Pappi* setæ corollam subæquantes, uniseriatæ, scabridæ, persistentes. *Ovaria* dense sericeo-pubescentia.

Natal : on the top of Tabamhlopi Mountain, alt. 6000–7000 ft., flowering in February, *Evans*, 412 ; Langalibalele's Location, *Fannin*, 2013.

Mr. Evans describes this as a "round shrub" on his label, but does not state its size.

715. **Macowania pulvinaris**, *N. E. Brown* [Compositæ-Inuloideæ] ; proxima *M. revolutæ*, Oliv., foliis capitulisque minoribus omnino recedit.

Fruticulus hemisphæricus, densissime ramosus, 1 ped. altus. *Folia* conferta, 3–4 lin. longa, $\frac{1}{3}$–$\frac{1}{2}$ lin. lata, linearia, glanduloso-scabrida, dorso vittis 2 albo-tomentosis instructa. *Capitula* terminalia, solitaria, radiata, 5 lin. diam. *Pedunculus* 1–1½ lin. longus, albo-tomentosus. *Involucri* squamæ lineares, acuminatæ, imbricatæ, interiores 3–4 lin. longæ, ½ lin. latæ, dorso subglandulosæ. *Corolla radii* 4 lin. longa, ligulata, lutea ; disci 2 lin. longa, lutea. *Achænia* pubescentia.

Cape Colony. Queenstown Division : on the summit of Andries Berg, near Bailey, growing among rocks, forming a very dense rounded cushion, alt. 6800 ft., *Galpin*, 2258.

716. **Senecio viscidus**, *N. E. Brown* [Compositæ-Senecionideæ] ; affinis *S. glutinoso*, Thunb., capitulis discoideis cæruleis differt.

Herba 10–12 poll. alta, glutinoso-pubescens, foliosa. *Folia* $1\frac{1}{4}$–3 poll. longa, 6–14 lin. lata, petiolata, oblonga, pinnatisecta, basi angustata ; lobi utrinque 3–5, paucidentati vel pinnatifido-lobulati, $1\frac{1}{2}$–$6\frac{1}{2}$ lin. longi, $\frac{3}{4}$–5 lin. lati ; petioli basi plus minus auriculati. *Capitula* laxe corymbosa, pedunculata, 4 lin. longa, 3 lin. diam., discoidea, cærulea, 18–20-flora. Involucrum cylindricum, basi bracteolis parvis subulatis paucis calyculatum ; bracteæ 10–13, lineares, subulato-acuminatæ. *Corolla* tubulosa, 5-dentata, ad medium ampliata, glabra ; tubus 3 lin. longus ; dentes $\frac{1}{2}$ lin. longi, anguste ovati, apice tuberculato-incrassati, reflexi. *Achenia* striata, glabra.

NATAL. Byrne, alt. 4000 ft., *Wood ;* Van Reenens Pass, alt. 5000–6000 ft., *Wood*, 5607.

717. **Euryops floribundus**, *N. E. Brown* [Compositæ-Senecionideæ] ; affinis *E. pedunculato*, N. E. Br., pedunculis triplo brevioribus facile distinguitur.

Frutex 3–5 ped. altus, ramosus, omnino glaber. *Folia* 1–$2\frac{1}{4}$ poll. longa, supra medium furcata vel trifida, lobi 3–10 lin. longi, $\frac{1}{3}$ lin. lati, lineari-subteretes, acuti. *Pedunculi* ad apices ramorum corymbosi, $1\frac{1}{4}$–$2\frac{1}{4}$ poll, longi, graciles. *Capitula* radiata, $\frac{1}{2}$ poll. diam., lutea *Involucrum* hemisphæricum, 8–9-lobatum ; lobi ovati, subacuti, trilineati. *Flores* radii 3 lin. longi, ligulati, obtusi ; flores disci $1\frac{1}{2}$ lin. longi, tubulosi, 5-dentati ; dentes ovati, acuti, reflexi. *Pappi* setæ copiosæ, scabridæ, exteriores arcte reflexæ.

CAPE COLONY. Queenstown Division : in valleys near Queenstown, alt. 3500 ft., *Galpin* 1536.

718. **Osteospermum glabrum**, *N. E. Brown* [Compositæ-Calenduloideæ] ; proximum *O. scabro*, Thunb., sed foliis lævibus floribusque majoribus distinctum.

Frutex $1\frac{1}{2}$–2 ped. altus, omnino glaber. *Rami* conferti, stricti, erecti, dense foliosi. *Folia* alterna, 4–6 lin. longa, $\frac{2}{3}$ lin. lata, linearia, acuta, mucronata, dorso carinata, erecta, laxe imbricata. *Pedunculus* terminalis, 2–3 lin. longus, foliis brevior. *Capitulum* solitarium, $1\frac{1}{4}$ poll. diam. *Involucri* bracteæ 12–14 biseriatæ, 5–6 lin. longæ, $1\frac{1}{4}$–$1\frac{1}{3}$ lin. latæ, lanceolatæ, acuminatæ, dorso scabridæ. *Flores* radii 7 lin. longi, 2 lin. lati, lineari-oblongi, apice tridentati, lutei ; flores disci 2 lin. longi, tubulosi, 5-angulares, breviter 5-dentati, angulis scaberulis.

CAPE COLONY. Riversdale Division : on the summit of Muis Kraal Ridge, near Garcias Pass, alt. 1500 ft., *Galpin*, 4217.

719. **Ursinia alpina**, *N. E. Brown* [Compositæ-Arctotideæ] ; affinis *U. apiculatæ*, DC., foliis non albo-apiculatis et scapo multibracteato differt.

Herba perennis. *Folia* radicalia, conferta, $\frac{1}{2}$–$1\frac{1}{4}$ poll. longa, supra medium pinnatisecta, glabra, glanduloso-punctata ; lobi 2–5-jugi, $\frac{3}{4}$–2 lin. longi, $\frac{1}{3}$ lin. lati, lineares, breviter aristato-apiculati. *Scapus* 5–10 poll. longus, monocephalus, laxe foliis

reductis multibracteatus. *Capitulum* 10–13 lin. diam. *Involucrum* late campanulatum ; bracteæ 4–5-seriatæ, glabræ, sparsim glanduloso-punctatæ, exteriores lineares, acuminatæ, intermediæ oblongæ, obtusæ, brunneo-marginatæ, interiores maximæ, oblongæ, obtusæ, apice membranaceæ, brunneæ. *Receptaculum* convexum, paleaceum ; paleæ submembranaceæ, apice acute trifidæ. *Corolla* radii 4–5½ lin. longa, 1 lin. lata, ligulata, minute 2–3-denticulata, supra lutea, subtus cupreo-brunnea, extra glandulosa ; disci tubulosa, 5-dentata, lutea, glandulosa. *Pappi* squamæ late ovato-oblongæ, obtusissimæ.

NATAL. On damp rocks at Ulundi, alt. 5000–6000 ft., *Evans*, 404.

720. **Berkheya bilabiata**, *N. E. Brown* [Compositæ-Arctotidæ] ; affinis *B. montanæ*, Wood et Evans, differt foliis late elliptico-oblongis nec basi attenuatis.

Caulis 3–4 ped. altus, simplex, puberulus, setosus, usque ad apicem foliosus. *Folia* alterna, suprema sessilia, cetera petiolata ; petioli ¼–1½ poll. longi, spinuloso-marginati ; laminæ 2–7 poll. longæ, 1–4½ poll. latæ, ellipticæ vel elliptico-ovatæ, foliorum supremorum oblongæ, obtusæ, late sinuato-crenatæ, breviter spinuloso-ciliatæ, supra virides, scaberulæ, subtus canotomentosæ. *Capitula* pauca, corymbosa, radiata, multiflora, 1¼ poll. diam. *Involucri* bracteæ patentes, 4–7 lin. longæ, ½–¾ lin. latæ, lineares, acutæ, spinoso-mucronatæ et ciliatæ, utrinque minute scaberulæ, virides. *Receptaculum* alveolatum ; alveoli setoso-ciliati. *Flores* radii neutri ; corolla 6 lin. longa, bilabiata, extra pubescens, lutea ; labia subæquilonga ; labium exterius ligulatum, tridentatum ; labium interius lineare ; corolla disci 3 lin. longa, tubulosa, superne parum ampliata, usque ad medium 5-loba, extra pubescens ; lobi lineares, acuti. *Ovarium* glabrum. *Pappi* squamæ ⅓ lin. longæ, oblongæ vel subquadratæ, truncatæ, denticulatæ.

NATAL. In a valley, Van Reenens Pass, alt. 5000–6000 ft., flowering in March, *Wood*, 5605.

721. **Berkheya nivea**, *N. E. Brown* [Compositæ-Arctotideæ] ; affinis *B. seminivea*, Harv., differt foliis majoribus, marginibus breviter setuloso-ciliatis nec longe spinulosis.

Caulis 1½–3 ped. altus, simplex vel parce ramosus, foliosus, in pedunculum monocephalum 2–3-bracteatum abeuns, dense arachnoideo-albo-lanatus. *Folia* ascendentia, 2–3¾ poll. longa, ½–1¼ poll. lata, oblongo-lanceolata vel elliptico-lanceolata, integra, acuta, aristata, basi cuneato-acuta, marginibus revolutis breviter setuloso-ciliata, supra viridia, primum albo-araneosa, demum glabra, subtus dense albo-lanata, inferiora petiolata, superiora subsessilia ; petioli 1½–5 lin. longi, utrinque longe setiferi. *Capitulum* solitarium, 3 poll. diam., radiatum, multiflorum, luteum. *Involucri* bracteæ 9–12 lin. longæ, ¾–1 lin. latæ, lineares, aristatæ, longe setoso-ciliatæ, dorso dense albo-lanatæ ; setæ subscabræ. *Corolla* radii 1¼ poll. longa, ligulata, apice tridentata ; corolla

disci 3 lin, longa, tubulosa, usque ad medium 5-dentata, glabra ; dentes lineares, acutæ. *Pappi* squamæ 3–4-seriatæ, cuneato-oblongæ, obtusæ, denticulatæ. *Ovarium* appresse pubescens.

Transvaal. Cerro de Pasco Mine, near Barberton, alt. 2200 ft., *Galpin*, 1356.

722. **Berkheya spinulosa**, *N. E. Brown* [Compositæ-Arctotideæ] ; capitulis iis *B. Adlami*, Hook. f., similibus, sed planta humilior, foliis minoribus et magis confertis.

Herba bipedalis. *Caulis* simplex, alatus, usque ad apicem foliosus, minute glanduloso-pubescens. *Folia* approximata, inferiora 2–3½ poll. longa, ¾ poll. lata, superiora gradatim minora, anguste oblonga, acuta, sinuato-lobata, basi in alas longe decurrentia, marginibus longe spinuloso-ciliatis, supra viridia, minutissime glandulosa, subtus dense albo-tomentosa. *Capitula* 3–4, corymbosa, pedunculata, 1½–1¾ poll. diam. *Involucri* bracteæ 4–5-seriatæ, basi concretæ, 3–5 lin. longæ, ⅔ lin. latæ, e basi attenuatæ, spinoso-acuminatæ et ciliatæ, minute glanduloso-pubescentes. *Flores* radii 7 lin. longi, 1½ lin. lati, ligulati, apice tridentati, lutei ; flores disci 3¼ lin. longi, tubulosi, ad medium 5-dentati, lutei. *Ovarium* glabrum. *Pappi* squamæ obtusæ, denticulatæ.

Cape Colony. Queenstown Division : plains near Queenstown, alt. 3500 ft., *Galpin*, 1694.

723. **Anagallis Hanningtonii**, *Baker* [Primulaceæ] ; ad *A. parviflorum*, Hoffm. et Link, accedit ; recedit sepalis ovato-acuminatis, corolla calyce sesquilongiore, tubo brevissimo, lobis ovatis.

Herba annua, erecta, glabra. *Caules* graciles, tetragoni, superne ramosi. *Folia* sessilia, opposita, parva, ovata, mucronata, basi late rotundata. *Flores* ad axillas foliorum solitarii, pedicellis ascendentibus floribus multo longioribus. *Sepala* ovata, acuminata, 1½ lin. longa. *Corolla* pallida, tubo brevissimo, lobis ovatis. *Stamina* calyci æquilonga. *Capsula* globosa, parva, ad medium circumscisse dehiscens.

Central Africa. German East Africa, *Hannington*. British Central Africa ; Fwambo, near Lake Tanganyika, alt. 5000–6000 ft., *Carson*.

In habit it closely resembles *Lysimachia adoensis*, Hochst., but that species has a capsule which splits into valves.

724. **Sebæa humilis**, *N. E. Brown* [Gentianaceæ] ; proxima *S. sulphureæ*, Cham. et Schlecht., differt floribus minoribus et stigmatibus duplo brevioribus.

Herba annua, pusilla, 1½–2½ poll. alta, glabra. *Caulis* simplex, gracilis. *Folia* pauca, inferiora rosulata, subsessilia, 1½–3½ lin. longa, 1¼–3 lin. lata, ovata vel orbiculato-ovata, subobtusa, basi late rotundata, vix subcordata. *Cymæ* 2–10-floræ. *Pedicelli* 1–3 lin. longi. *Sepala* 5, anguste navicularia, acutissima, alato-carinata, 2½–3 lin. longa, 1 lin. lata ; carina ½ lin. lata. *Corolla* 5-loba, lutea ; tubus 2½ lin. longus ; lobi 2½ lin. longi, 1⅓–1½ lin.

lati, elliptico-oblongi, obtusi. *Stamina* 5, fauci inserta ; filamenta brevissima ; antheræ exsertæ, fere 1 lin. longæ, lineares, eglandulosæ. *Stylus* longe exsertus, $2\frac{3}{4}$ lin. longus, prope basin biglandulosus ; stigma magnum, percrassum, conoideo-clavatum, integrum.

Cape Colony. Queenstown Division : mountain-sides near Queenstown, alt. 4000 ft., *Galpin*, 1549.

725. **Sebæa laxa**, *N. E. Brown* [Gentianaceæ] ; species distinctissima, ramosa, foliis lanceolatis acutis, cymis laxis.

Herba annua, 4–10 poll. alta, ramosa, glabra. *Rami* gracillimi, erecti. *Folia* 1–4 lin. longa, $\frac{1}{2}$–$1\frac{3}{4}$ lin. lata, patentia, lanceolata vel ovata, acuta vel acuminata, basi angustata, subpetiolata. *Cymæ* laxæ, 3–15-floræ. *Sepala* $1\frac{1}{2}$ lin. longa, vix $\frac{1}{2}$ lin. lata, lanceolata, acuta, carinata. *Corolla* hypocrateriformis, quadrifida ; tubus $1\frac{1}{2}$–$1\frac{3}{4}$ lin. longus ; lobi 2–$2\frac{1}{2}$ lin. longi, 1 lin. lati, ovato-lanceolati, acuti vel subacuti. *Stamina* longe exserta ; filamenta $\frac{3}{4}$ lin. longa ; antheræ $\frac{1}{2}$ lin. longæ, lineares, apice uniglandulosæ. *Stylus* $1\frac{1}{4}$ lin. longus, leviter clavatus, glaber.

Cape Colony. Riversdale Division : on the Kampsche Berg, *Burchell*, 7089. Swellendam Division : Zuurbraak Mountain, alt. 3000 ft., *Galpin*, 4337.

726. **Phyllopodium alpinum**, *N. E. Brown* [Scrophularineæ-Manuleæ] ; a speciebus reliquis facile distinguitur foliis arcte approximatis crassiusculis.

Herba pusilla. *Rami* $\frac{1}{2}$–2 poll. longi, decumbentes vel prostrati, pubescentes, usque ad apices foliosi. *Folia* conferta, 2–3 lin. longa, $\frac{2}{3}$–1 lin. lata, lanceolata, subobtusa, basi in petiolum attenuata, integra vel paucidentata, crassiuscula, glabra, basi ciliata. *Spicæ* subglobosæ, 4–6 lin. diam. *Bracteæ* 2 lin. longæ, $\frac{2}{3}$ lin. latæ, lanceolato-oblongæ, obtusæ. *Calyx* $1\frac{3}{4}$ lin. longus, profunde 5-lobus ; lobi lineares, obtusi, villosi. *Corollæ* tubus $1\frac{3}{4}$–2 lin. longus ; limbus $2\frac{1}{2}$–3 lin. diam., 5-lobus, disco villoso ; lobi 1–$1\frac{1}{4}$ lin. longi, oblongi, obtuse rotundati, pallide carnei, 2 superiores in disco auriantiaci. *Ovarii* loculi 4–5-ovulati.

Cape Colony. Caledon Division : on the summit of Genadendal Mountain, alt. 5000 ft., *Galpin*, 4407.

727. **Chænostoma subnudum**, *N. E. Brown* [Scrophulariaceæ-Manuleæ] ; *C. denudato*, Benth., affinis, floribus et capsulis minoribus differt.

Herba (?) 1–$1\frac{1}{2}$ ped. alta, erecta, ramosa. *Rami* tenues, glabri, subviscidi. *Folia* opposita, distantia, linearia, inferiora 3–7 lin. longa, superiora 1–$2\frac{1}{2}$ lin. longa. *Panicula* laxa. *Pedicelli* 6–8 poll. longi, ascendentes, papilloso-scabridi. *Calyx* $1\frac{1}{2}$ lin. longus, profunde 5-fidus ; lobi lineares, scabrido-pubescentes. *Corolla* lutea vel aurantiaca, extra pubescens ; tubus $1\frac{1}{2}$ lin. longus ; lobi $1\frac{1}{2}$–$1\frac{3}{4}$ lin. longi, $1\frac{1}{2}$ lin. lati, elliptici vel suborbiculati, obtuse rotundati.

Cape Colony. Riversdale Division: Muis Kraal, near Garcias Pass, alt. 1500 ft., *Galpin*, 4375.

728. **Hyobanche Barklyi**, *N. E. Brown* [Scrophulariaceæ-Gerardieæ]; affinis *H. sanguineæ*, Linn., sed floribus subcorymbosis multo longioribus gracilioribus differt.

Herba carnosa, parasitica. *Folia* non vidi. *Flores* subcorymbosi. *Bracteæ* 6–8 lin. longæ, 2 lin. latæ, anguste oblongæ, obtusæ, concavæ, carnosæ, parce villosæ. *Bracteolæ* 8–9 lin. longæ, $\frac{1}{2}$ lin. latæ, lineares, apice levissime dilatatæ, obtusæ, parce villosæ. *Calyx* 12–14 lin. longus, 5-lobus, parce villosus, albidus (?); lobi lineares, subobtusi, $\frac{3}{4}$–1 lin. lati, posticus liber, cæteri basi ad 3–4 lin. connati. *Corolla* $2\frac{1}{4}$–$2\frac{1}{2}$ poll. longa, inferne $1\frac{1}{2}$ lin. diam., superne 3 lin. diam., tubulosa, curvata, apice subgaleata, obtusa, superne villosa, rubra; os obliquum, parvum, 4–5 lin. longum; tubus intra omnino glaber. *Stamina* corollæ subæqualia, glabra *Ovarium* ovoideum, glabrum; stylus staminibus æquilongus, apice curvatus, glaber; stigma crasso-clavatum, compressum.

Cape Colony. Little Namaqualand: parasitic on bulbs, in sand hills near Port Nolloth, *Barkly*.

729. **Hyobanche rubra**, *N. E. Brown* [Scrophulariaceæ-Gerardieæ]; affinis *H. sanguineæ*, Linn.; dissimilis inflorescentia subcorymbosa nec elongata, et floribus multo longioribus ore obliquis nec galeatis.

Herba parasitica, carnosa. *Folia* squamiformia, sessilia, carnosa, transverse ovata vel latissime ovata. obtusa, carnosa, imbricata, concava, glabra. *Flores* dense corymboso-spicati. *Bracteæ* $\frac{3}{4}$–1 poll. longæ, 5–6 lin. latæ, oblongæ, obtusæ, glabræ, ciliatæ; bracteolæ 12–14 lin. longæ, $1\frac{1}{4}$–$1\frac{1}{2}$ lin. latæ, lineares, obtusæ, ciliatæ et dorso linea villosa notatæ. *Calyx* $1\frac{1}{4}$–$1\frac{1}{2}$ poll. longus, 5-lobus, parce villosus; lobus posticus liber, linearis, acutus, cæteri ad medium connati, lineari-falcati, acuti. *Corolla* $2\frac{1}{4}$ poll. longa, tubulosa, apice oblique aperta nec galeata, superne villosa, rubra; os valde obliquum, 7–8 lin. longum, villosum, basi dente brevissimo instructum, marginibus revolutis; tubus intra ad basin villosus. *Stamina* corollæ subæqualia, glabra. *Ovarium* ovoideum, glabrum; stylus corollæ subæquilongus, apice curvatus, glaber: stigma a dorso compressum, magnum, leviter bilobum.

Cape Colony. Mossel Bay Division: Near Gauritz River Bridge, alt. 800 ft., *Galpin*, 4329.

730. **Rhamphicarpa montana**, *N. E. Brown* [Scrophulariaceæ-Gerardieæ]; proxima *R. humili*, Hochst., floribus multo majoribus differt.

Herba parva. *Caules* $2\frac{1}{2}$–4 poll. longi, procumbentes, villosi. *Folia* 6–9 poll. longa, $\frac{3}{4}$–4 lin. lata, lineari-lanceolata, acuta, integra vel dentata, hirta vel scabrida. *Pedicelli* 2–5 lin. longi. *Calyx* basi bibracteatus, 4–6 lin. longus, tubuloso-campanulatus, ad medium 5-lobatus, hirtus; lobi deltoideo-lanceolati, acuti.

Corollæ tubus 1–1¼ poll. longus, tenuis, cylindricus, leviter curvatus ; lobi patentes, 6–9 lin. longi, 6–10 lin. lati, obovati, apice obtuse rotundati.

Tropical and South Africa. Matabeleland, *Elliott.* Mountains of Basutoland, alt. 7000–8000 ft., *Right Hon. J. Bryce.*

731. **Tecoma Brycei**, *N. E. Brown* [Bignoniaceæ] ; *T. rivasoliana*, Tanfani, similis, differt corolla intra hirta.

Suffrutex 1½–2-pedalis. *Folia* opposita, 3–4 poll. longa, pinnata, 9-foliolata ; foliola petiolulata, lanceolata, acuminata, 9–15 lin. longa, 3–4 lin. lata, glabra. *Panicula* terminalis, 3–4 poll. longa ; rami breves, 3-flori. *Pedicelli* 6–7 poll. longi, medio bibracteolati. *Calyx* campanulatus, utrinque minute glandulosus ; tubus 4–5 lin. longus et latus ; lobi 3 lin. longi, 2–2½ lin. lati, deltoideo-ovati, mucronulati. *Corolla* lilacina, extra glabra, intra villosa ; tubus 1¼ poll. longus, basi contractus, anguste cylindricus, superne ampliatus, ¾ poll. diam., campanulatus ; lobi ½ poll. longi, late rotundati, ciliati.

Rhodesia. Mashonaland, in dry places, alt. 4500 ft., *Right Hon. J. Bryce.*

732. **Plectranthus albocœruleus**, *N. E. Brown* [Labiatæ-Ocimoideæ] ; similis *P. tomentoso*, Benth., sed villositate et calyce æqualiter dentato facile distinguitur.

Herba elata, ramosa. *Caulis* obtuse tetragonus, villosus. *Folia* petiolata ; petiolus 1–2½ poll. longus, villosus ; lamina 2–4 poll. longa, 1¾–3 poll. lata, late ovata, obtusa, basi subtruncata vel breviter cordata (lobis brevibus sæpe arcte contiguis), crenato-dentata, rugosa, supra longe villosa, subtus molliter pubescentia. *Verticillastri* sessiles, in spicam longe pedunculatam basi ramosam conferti. *Bracteæ* ½–1 lin. longæ, ½–⅔ lin. latæ, ovatæ, acutæ. *Pedicelli* ⅓–½ lin. longi. *Calyx* 1⅔ lin. longus, campanulatus, usque ad medium æqualiter 5-dentatus, pubescens ; dentes acuminati, primum patentes, demum erecti vel subconniventes. *Corolla* 5½–6 lin. longa, pubescens ; labium superius erectum, subquadratum, breviter 4-lobum, album, violaceo-lineatum ; labium inferius naviculare, late cæruleo-limbatum. *Stamina* 4, filamentis liberis.

British Central Africa. Nyasaland : Zomba, *Mahon.* Described from a living plant which was raised from seeds sent to Kew by Mr. J. Mahon in June, 1898, and flowered in January, 1899.

733. **Salvia Burchellii**, *N. E. Brown* [Labiatæ-Monardeæ] ; affinis *S. stenophyllæ*, Burch., sed foliis et indumento omnino distincta.

Herba humilis, ramosa, tomentosa. *Folia* subconferta, ½–1 poll. longa, petiolata, pinnatifida, bullato-rugosa et crispata ; lobi utrinque 2–3, lineari-oblongi, sublobulati, 1–2½ lin. longi, ½–1 lin. lati. *Verticillastri* pauciflori, remotiusculi. *Pedicelli* ⅓ lin. longi, tomentosi. *Calyx* campanulatus, glandulosus, pilis curvatis

pubescens, vix tomentosus; tubus $1\frac{3}{4}$–2 lin. longus; dentes 1–$1\frac{1}{4}$ lin. longi, deltoidei, acuti. *Corolla* 4 lin. longa, subtomentosa; tubus vix exsertus; labium superius $1\frac{1}{2}$ lin. longum, breviter et obtuse bilobum; labium inferius 2 lin. longum, $1\frac{1}{2}$ lin. latum, 4-lobum; lobi oblongi obtusi.

Cape Colony. Richmond Division: Rhenoster Poort, *Burchell*, 2120.

734. **Stachys albiflora**, *N. E. Brown* [Labiatæ-Stachydeæ]; proxima *S. grandifoliæ*, E. Mey., calycis infundibuliformis dentibus patentibus differt.

Caulis erectus, molliter villosus. *Folia* petiolata; petioli $\frac{3}{4}$–$1\frac{3}{4}$ poll. longi, villosi; laminæ $2\frac{1}{2}$–$3\frac{1}{2}$ poll. longæ, 2–$2\frac{1}{2}$ poll. latæ, cordatæ, acutæ, crenato-dentatæ, utrinque molliter pubescentes. *Verticillastri* 6-flori, remotiusculi. *Pedicelli* $\frac{1}{3}$ lin. longi. *Calyx* infundibuliformis, 5-dentatus, pubescens; tubus 2 lin. longus; dentes 1 lin. longi, patentes, deltoidei, spinoso-acuminati. *Corolla* 7–$7\frac{1}{2}$ lin. longa, alba; tubus e calyce exsertus; labium superius porrectum, subrectum, compresso-galeatum, apice truncatum, extra glanduloso-pubescens: labium inferius trilobum, extra minute pubescens, lobis lateralibus rotundato-oblongis, obtusis, crenulato-denticulatis, lobo antico transverse elliptico minute crenulato.

Natal. On the Drakensberg Range, alt. 6000–7000 ft., *Evans*, 395.

735. **Stachys parilis**, *N. E. Brown* [Labiatæ-Stachydeæ]; proxima *S. sessilifoliæ*, E. Mey., sed foliis petiolatis facile distinguitur.

Herba 10–15 poll. alta, erecta, molliter villoso-pubescens. *Folia* petiolata; petioli 2-6 lin. longi; laminæ 9–15 lin. longæ, 6–11 lin. latæ, deltoideo-ovatæ, obtusæ, basi aperte cordatæ, obtuse dentatæ, rugosæ (?). *Flores* axillares, solitarii, oppositi. *Pedicelli* 1–$1\frac{1}{2}$ lin. longi. *Calyx* 4 lin. longus, ad medium 5-dentatus, villosus; dentes 2 lin. longi, deltoideo-lanceolati, mucronato-pungentes. *Corolla* 8 lin. longa, puberula; labium superius 2 lin. longum; suberectum, suborbiculare, concavum; labium inferius $4\frac{1}{2}$ lin. longum, trilobum, lobis lateralibus brevibus oblique deltoideis obtusis, lobo antico transverse elliptico obtuso minutissime crenulato.

Natal. Tiger Cave Valley, on the Drakensberg Range, *Evans*, 387.

736. **Protea curvata**, *N. E. Brown* [Proteaceæ]; proxima *P. grandifloræ*, Thunb., sed foliis falcatis facile distinguitur.

Arbor 15 ped. alta vel ultra, ramis crassis cinereis, apice minute puberulis. *Folia* 4–7 poll. longa, $4\frac{1}{2}$–7 lin. lata, falcata, obtusa, basi longe attenuata, glabra, glauca, uninervia, oblique venosa, coriacea, haud marginata. *Capitulum* $2\frac{3}{4}$ poll. longum, circa 2 poll. latum, sessile. *Involucri* squamæ 8–9-seriatæ, basi

tomentosæ, superne glabræ, primum albo-ciliolatæ ; interiores quam calyces breviores, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. longæ, 3-6 lin. latæ, ligulatæ, obtusæ ; exteriores gradatim minores, subacutæ. *Calyx* fulvo-tomentosus ; tubus $1\frac{1}{2}$ poll. longus ; lobi 10 lin. longi, 3 cohærentes in lobum breviter bifidum apicibus pungentibus, 1 liber, mucronatus. *Stylus* $2\frac{1}{4}$ poll. longus, glaber, stigmate subulato sulcato-striato, basi levissime sinuato stylo continuo.

TRANSVAAL. Hillsides near Barberton, alt. 2500-3000 ft., *Galpin*, 973.

737. **Protea subvestita,** *N. E. Brown* [Proteaceæ] ; affinis *P. hirtæ*, Klotzsch, sed involucri squamis paucioribus exterioribus angustis acutis differt.

Frutex vel arbor nana, ramis junioribus tomentosis demum glabris. *Folia* conferta, sessilia, $1\frac{3}{4}$–$3\frac{1}{2}$ poll. longa, $\frac{3}{4}$–1 poll. lata, patentia, oblonga, obtusa vel subacuta, basi angustata, coriacea, primum dense lanata, demum glabrata, haud marginata. *Capitulum* 2 poll. longum, $1\frac{1}{2}$–$1\frac{3}{4}$ poll. latum, sessile. *Involucri* squamæ 6–7-seriatæ ; interiores $1\frac{1}{2}$–$1\frac{3}{4}$ poll. longæ, 3–5 lin. latæ, cuneato-oblongæ, obtusæ, apice sericeo-tomentosæ ; exteriores gradatim minores ; extimæ e basi ovata lineari-lanceolatæ, sericeo-tomentosæ. *Calycis* tubus $1\frac{1}{2}$ poll. longus, dense fulvo-hirsutus ; limbus 4 lin. longus, dorso subglaber, apice dense albo-barbatus. *Stylus* $1\frac{3}{4}$ poll. longus, tennis, glaber ; stigma $2\frac{1}{2}$–3 lin. longum, subulatum, sulcato-striatum, basi leviter flexuosum.

CAPE COLONY. Pondoland (Faku's Territory), *Sutherland.*

738. **Arthrosolen fraternus,** *N. E. Brown* [Thymelæaceæ] ; similis *A. gymnostachydi*, C. A. Mey., sed foliis omnino glabris et floribus duplo longioribus differt.

Suffrutex 6–10 poll. altus, multicaulis, ramosus. *Rami* erecti, graciles, appresse pubescentes. *Folia* opposita, subsessilia, 4–6 lin. longa, $\frac{2}{3}$–$1\frac{1}{2}$ lin. lata, plana, erecta, anguste lanceolata, acuta, basi angustata, utrinque glabra. *Spica* 6–9 lin. longa, laxa, 6–10-flora, ebracteata. *Calyx* extra appresse pubescens, ad medium purpureo-zonatus ; tubus $3\frac{1}{2}$–$2\frac{3}{4}$ lin. longus, gracilis ; lobi $1\frac{1}{3}$ lin. longi, $\frac{1}{2}$ lin. lati, oblongi, obtusi, lutescentes, apice purpurei. *Stamina* 8, biseriata, inclusa.

CAPE COLONY. Queenstown Division : mountains near Queenstown, 4000–5000 ft., *Galpin*, 1771.

Meisner describes the flowers of *A. gymnostachys*, C. A. Mey., as being 4 lin. long, but in Drège's specimens on which that species was founded, they are only $2\frac{1}{2}$ lin. long, with shorter, broader lobes than in the present species, and rather densely villous-pubescent.

739. **Lachnæa passerinoides,** *N. E. Brown* [Thymelæaceæ] ; affinis *L. funicauli*, Schinz, sed humilior, atque foliis duplo brevioribus et capitulis 2-floris differt.

Suffrutex 4–5 poll. altus, qui *Passerinam* refert. *Rami* graciles albo-tomentosi. *Folia* opposita, arcte appressa, nodis longiora,

1 lin. longa, $\frac{1}{3}$ lin. lata, lanceolata, concava, dorso valde carinata, glabra, marginibus ciliata et apice barbata. *Capitula* perparva, 2-flora ; involucrum 4-bracteatum ; bracteæ foliis similes, erectæ, $1\frac{1}{2}$ lin. longæ, concavæ, apice dense barbato-ciliatæ ; bracteolæ interiores minutæ, lineares, dense villosæ. *Calycis* tubus 1 lin. longus, intra extraque sericeus : lobi 1 lin. longi, extra sericei. *Glandulæ* 8, cylindricæ, vix $\frac{1}{4}$ lin. longæ, ad fauces insertæ. *Stamina* 8, biseriata, inæquilonga, exserta ; filamenta longiora $\frac{1}{2}$ lin. longa.

Cape Colony. Riversdale Division : on the mountains of Garcias Pass, alt. 12,000 ft., *Galpin*, 4497.

740. **Euphorbia calabarica**, *Burkill* [Euphorbiaceæ-Euphorbieæ]; ex affinitate *E. Grantii*, Oliv., foliis obovatis, habitu erecto, caule simplice vel parce ramoso.

Herba perennis, 2–3 ped. alta. *Caulis* glaber, teres, basi lignosus, 3–4 lin. crassus. *Folia* sparsa, obovata, glabra, apice brevissime acuminata, acuta, basi attenuata, 4–5 poll. longa, $1\frac{1}{2}$–2 poll. lata, nervis lateralibus utrinque 9–12 inconspicuis ; petiolus $\frac{1}{2}$ poll. longus. *Inflorescentiæ* e cymis tribus effecta, capitulo centrali femineo, ceteris masculinis ; rami cicatricibus latioribus in ætate notati, compressi ; bracteæ foliaceæ, rotundatæ, apice in setam tenuissimam 1 lin. longam productæ. *Involucrum* $1\frac{1}{2}$ lin. altum ; lobi rotundati, pectinati, minute hirsuti ; glandulæ capituli centralis 5, aliorum 4, transverse ovatæ, margine exteriori lobatæ, e facie inferiori antenniferæ, antennis 2–4 semel vel bis bifurcatis apicibus capitatis ; bracteæ inter flores laciniatæ, minute hirsutæ. *Antheræ* subglobosæ. *Ovarium* glabrum ; styli rami tres, apice tantum bifurcati. *Capsula* glabra, globosa, 3 lin. diam. *Semina* pallida, glabra, lævia.

West Africa. Old Calabar, flowering in February, *G. Mann*, 2315. Also in cultivation at Kew from the same locality.

741. **Synadenium Cameronii**, *N. E. Brown* [Euphorbiaceæ-Euphorbieæ] ; affinis *S. arborescenti*, Boiss., floribus simpliciter umbellatis distinguitur.

Caules 7–8 ped. alti, carnosi, teretes, glabri. *Folia* breviter petiolata, 3 poll. vel ultra longa, circa $1\frac{1}{4}$ poll. lata, obovata, acuta, basi longe cuneata, utrinque glabra, decidua. *Umbellæ* axillares, simplices, 4–5-floræ, erectæ. *Pedunculi* $\frac{1}{3}$–$\frac{3}{4}$ poll. longi, carnosi, dorso subpuberuli. *Bracteæ* 1 lin. longæ, ovatæ, pubescentes. *Pedicelli* 3–4 lin. longi, 1 lin. crassi, subclavati, carnosi, patule pubescentes. *Bracteolæ* $1\frac{1}{2}$–$1\frac{2}{3}$ lin. longæ et latæ, subquadratæ, minute glanduloso-denticulatæ, pubescentes, involucro paulo breviores. *Involucrum* exterius carnosum, late infundibuliforme, integrum, margine truncatum, extra ad basin pubescens, superne glabrum ; interius in squamas membranaceas 5 quadratas apice fimbriatas utrinque pubescentes divisum. *Stamina* 30, 5-fasciculata ; fasciculi 2–4-bracteolati ; bracteolæ lineari-spathulatæ, superne hirtæ, liberæ vel connatæ. *Involucellum* floris feminei membranaceum, tubulosum, 5-angulare, breviter 5-lobum,

fimbriatum, utrinque villoso-pubescens, angulis plumoso-fimbriatis. *Ovarium* appresse pubescens; styli ad medium bifidi, ramis filiformibus.

BRITISH CENTRAL AFRICA. Nyasaland: Namasi, *Cameron*.

742. **Bobartia gracilis,** *Baker* [Iridaceæ]; ad *B. aphyllam*, Ker-Gawl., accedit; differt caulibus gracilioribus brevioribus, spathis minoribus.

Caulis gracilis, teres, pedalis vel sesquipedalis, pallide virens, sulcatus, basi vaginatus. *Folia* propria nulla. *Spathæ* 1–6, paucifloræ, in glomerulum terminalem folio reducto rigido parvo lanceolato suffultum dispositæ; spatharum valvæ duræ, pallide virides, exterior 5–6, interior 12–13 lin. longa. *Pedicelli* spathæ æquilongi. *Perianthium* aurantiacum, segmentis oblanceolatis obtusis conformibus ascendentibus 6–7 lin. longis. *Stamina* perianthio triplo breviora, antheris post anthesin convolutis. *Ovarium* turbinatum, glabrum; stylus brevis, ramis 3 subulatis erecto-patentibus 3 lin. longis.

CAPE COLONY. Plains near Cove Rock, East London, alt. 50 ft., *Galpin*, 3254.

743. **Asparagus longipes,** *Baker* [Liliaceæ-Asparageæ]; habitus *A. asiatici*, Linn., et *A. africani*, Lam.; recedit foliis haud pungentibus, floribus semper geminis ad basin ramulorum solum productis.

Suffrutex sarmentosus, ramis copiose pinnatim ramulosis. *Folia* basi haud pungentia. *Cladodia* 9–12-na, subteretia, gracilia, viridia, 6–12 lin. longa. *Flores* hermaphroditi, semper gemini, ad basin ramulorum solum producti, pedicellis arcuatis 5–6 lin. longis. *Perianthium* $2\frac{1}{2}$ lin. longum, segmentis ligulatis albis viridi-brunneo-vittatis infra medium diu conniventibus. *Stamina* perianthio distincte breviora, antheris oblongis parvis luteis.

CAMEROON MOUNTAINS. Imported and presented to the Royal Gardens by Messrs. Sander, of St. Albans. It flowered at Kew in November, 1898.

744. **Kniphofia longiflora,** *Baker* [Liliaceæ-Hemerocallideæ]; ad *K. sarmentosam*, Kunth, accedit; differt perianthio duplo longiore, staminibus haud exsertis.

Folia linearia, bipedalia, flaccida, viridia, acute carinata, basin versus 9–10 lin. lata, ad apicem sensim attenuata, marginibus lævibus. *Pedunculus* validus, tripedalis et ultra, prope medium bracteis 2 longis linearibus prædítus. *Racemus* densus, oblongus, 3 poll. longus, floribus omnibus arcte deflexis, pedicellis brevissimis, bracteis oblongis scariosis $1\frac{1}{2}$–2 lin. longis. *Perianthium* cylindricum, gracile, luteo-rubrum, curvatum, 18 lin. longum, lobis ligulatis obtusis 2 lin. longis. *Stamina* biseriata, inclusa. *Stylus* longe exsertus.

NATAL, probably. Raised from seeds, communicated in October, 1897, by Mrs. Watkins, Euston Square, London, and flowered at Kew under glass in November, 1898.

745. **Aloe lugardiana**, *Baker* [Liliaceæ-Aloineæ] ; ad *A. commutatam*, Todaro, magis accedit ; differt perianthii segmentis tubo æquilongis.

Planta acaulis. *Folia* dense rosulata, crassa, ovato-lanceolata, subpedalia, inferne 2–3 poll. lata, rubro-brunnea, haud lineata, maculis oblongis albidis copiosis decorata, aculeis marginalibus deltoideo-cuspidatis corneis magnitude mediocribus. *Racemus* laxus, cylindricus, centralis, subpedalis; pedicelli ascendentes, 5–6 lin. longi ; bracteæ ovato-cuspidatæ, parvæ. *Perianthium* cylindricum, supra ovarium constrictum, 12–15 lin. longum ; segmenta tubo æquilonga. *Stamina* inclusa. *Stylus* demum exsertus.

RHODESIA. Bechuanaland ; Sibetuane's drift, Botletle river, alt. 3000 ft., *Mrs. E. J. Lugard.*

746. **Aloe (Eualoe) Galpini**, *Baker* [Liliaceæ-Aloineæ] ; ad *A. platylepidem*, Baker, accedit ; differt foliis latioribus, genitalibus longe exsertis.

Planta arborescens, caule 8-pedali. *Folia* lanceolata, crassa, deorsum 5–6 poll. lata, ad apicem sensim attenuata, dentibus marginalibus crebris deltoideis corneis magnitudine mediocribus. *Pedunculus* validus (6–8 lin. diam.), basi ramosus. *Racemus* densissimus, cylindricus, pedalis, pedicellis brevissimis, bracteis parvis ovatis. *Perianthium* cylindricum, splendide rubrum, 12–14 lin. longum, pæne ad basin fissum. *Genitalia* longe exserta.

CAPE COLONY. Mountain sides, Queenstown, alt. 3500–4000 ft., *Galpin*, 2335.

747. **Aloe (Eualoe) Lastii**, *Baker* [Liliaceæ-Aloineæ] ; ad *A. brachystachyam*, Baker, accedit ; differt foliis brevioribus latioribus deorsum facie distincte lineatis, perianthio pallide luteo, tubo brevissimo.

Caudex simplex, gracilis, sesquipedalis. *Folia* dense rosulata, lanceolata, 12–15 poll. longa, supra basin 3 poll. lata, ad apicem sensim attenuata, immaculata, inferne facie lineata, aculeis marginalibus parvis crebris deltoideis patulis. *Pedunculus* simplex, $1\frac{1}{2}$–2-pedalis, bracteis vacuis pluribus parvis præditus. *Racemus* densus, capitatus, pedicellis erectis 6–12 lin. longis, bracteis parvis obtusis pallidis viridi-lineatis. *Perianthium* rectum, cylindricum 15 lin. longum, pallide luteum, apice viridulum, tubo brevissimo, segmentis conniventibus, apice patulis. *Stamina* perianthio æquilonga. *Stylus* demum longe exsertus.

ZANZIBAR. Sent home alive in 1885, by J. T. Last, Esq., and flowered at Kew in December, 1898.

748. **Aloe somaliensis**, *C. H. Wright* [Liliaceæ-Aloineæ] ; ex affinitate *A. zebrinæ*, Baker.

Planta breviter caulescens. *Folia* rosulata, prope apices decurvata, $5\frac{1}{2}$ poll. longa, $2\frac{1}{4}$ poll. lata, 4 lin. crassa, rigida, utrinque vernicosa, maculis oblongis luteo-viridibus ornata; dentes rubri, leviter recurvi, 1–$1\frac{1}{2}$ lin. longi, inter se 3 lin. distantes. *Panicula* leviter ramosa, $1\frac{1}{2}$ ped. longa; pedunculus compressus; bracteæ membranaceæ, triangulares, acuminatæ, pedicellos paullo superantes. *Perianthii* segmenta, oblonga, obtusa, 8 lin. longa, 3 lin. lata, basi rubra, apice semihyalina, viridi-carinata. *Stamina* exteriora perianthii segmentis æquilonga, interiora paullo breviora; filamenta compressa. *Ovarium* ovoideum.

SOMALILAND. *Miss Edith Cole*, 261. Described from a plant grown at Kew.

749. **Tulbaghia campanulata**, *N. E. Brown* [Liliaceæ-Allieæ]; affinis *T. ludwigiana*, Harv., foliis linearibus facile distinguitur.

Folia linearia, $1\frac{1}{4}$-2 lin. lata, obtusa, glabra. *Scapus* $10\frac{1}{2}$ poll. longus, 1 lin. crassus, glaber. *Bracteæ* 2, ovato-lanceolatæ, acuminatæ, $\frac{1}{2}$ poll. longæ. *Umbella* circa 6-flora. *Pedicelli* $\frac{1}{2}$–$1\frac{1}{4}$ poll. longi, glabri. *Perianthii* tubus $2\frac{1}{2}$ lin. longus, 2 lin. diam., campanulatus; lobi $2\frac{1}{2}$ lin. longi, $1\frac{3}{4}$ lin. lati, oblongi, acuti. *Corona* magna, $1\frac{1}{2}$ lin. longa, carnosa, crenulata, vel brevissime trilobata, aurantiaca.

CAPE COLONY. Queenstown Division: mountains near Queenstown, alt. 3500–4000 ft., *Galpin*, 1660.

750. **Dipcadi brevipes**, *Baker* [Liliaceæ-Scilleæ]; ad *D. magnum*, Baker, magis accedit; differt habitu minore, foliis brevioribus angustioribus, pedicellis brevibus floriferis cernuis, perianthii segmentis exterioribus haud caudatis.

Bulbus globosus, 12–15 lin. diam. *Folia* plura, ascendentia, linearia vel lanceolata, 9–10 poll. longa, inferne 6–9 lin. lata, modice firma, glabra, margine haud ciliata. *Pedunculus* flexuosus, foliis brevior. *Racemus* laxus, simplex, demum semipedalis; pedicelli brevissimi, floriferi cernui, fructiferi ascendentes; bracteæ lanceolatæ, parvæ. *Perianthium* viridulum, 9 lin. longum; segmenta interiora apice patula, exteriora lingulata, reflexa 2–3 lin. longa, interioribus paullo longiora. *Filamenta* antheris æquilonga. *Stylus* ovario brevior. *Capsula* oblonga, angulata, $4\frac{1}{2}$ lin. longa.

RHODESIA. Bechuanaland; Ngamiland; Kwebe hills, alt. 3300 ft., *Mrs. E. J. Lugard*.

751. **Ornithogalum tenuipes**, *C. H. Wright* [Liliaceæ-Scilleæ]; *O. setifolio*, Kunth, affine, foliis paucioribus pedicellisque elongatis bracteisque minutis differt.

Bulbus oblongus, sublævis, sursum attenuatus. *Folia* 5, filiformia, supra canaliculata, subtus convexa, scapo æquilonga vel paullo breviora. *Pedunculi* 4–5 poll. longi; bracteæ $1\frac{1}{2}$ lin. longæ, basi latæ, membranaceæ, sursum abrupte acuminatæ; racemi 3, $5\frac{1}{2}$ poll. longi; pedicelli 5–6 lin. longi, filiformes. *Perianthium*

6 lin. diam.; segmenta oblonga, acuta, 3 lin. longa, 1¼ lin. lata, alba, viridi-carinata; carinæ segmentorum exteriorum quam interiorum latiores. *Stamina* segmentis perianthii dimidio breviora. *Ovarium* trigonum; stylus columnaris; stigma trilobum lobis decurrentibus, stamina paullo superans.

Cape Colony. Albany Div.: Grahamstown, *Schönland*, 246. Flowered at Kew in July, 1899.

752. **Gleichenia (Eugleichenia) elongata**, *Baker* [Filices-Gleicheniaceæ]; ad *G. Bergii*, Kunze, magis accedit; differt rhachi primaria elongata, pinnis remotis.

Lamina elongato-deltoidea, sesquipedalia et ultra, quadripinnata, rigide coriacea, facie viridis, glabra, dorso glauca, ad costas dense ferrugineo-pilosa, rhachi primaria simplici nuda elongata; pinnæ 4-jugæ, lanceolatæ, sessiles, remotæ, 6–9 poll. longæ, 15–18 lin. latæ; pinnulæ lineares, multijugæ; segmenta ultima rotunda, ½ lin. longa. *Sori* centrales, superficiales, globosi, sporangiis 6–8 stramineis.

British East Africa. Uganda; Ruwenzori, amongst heather, Butagu, alt. 8000–10000 ft., *Scott-Elliot*, 8011.

753. **Asplenium (Euasplenium) efulense**, *Baker* [Filices-Polypodiaceæ]; ad *A. simuatum*, P. Beauv., accedit; differt frondibus brevioribus oblongo-lanceolatis, rhizomate gracili repente, soris e costa pæne ad marginem productis.

Rhizoma gracile, repens, paleis lanceolatis nigrescentibus clathratis dense vestitum. *Stipites* breves, segregati, erecti, nudi. *Lamina* simplex, oblongo-lanceolata, 6–8 poll. longa, 1½–2 poll. lata, subintegra, acuminata, basi cuneata, modice firma, utrinque viridis, glabra; venæ remotæ, conspicuæ, ascendentes, sæpissime furcatæ. *Sori* graciles, e costa pæne ad marginem frondis producti. *Indusium* firmum, angustum, persistens.

Cameroons. Efulen, *Bates*, 454.

754. **Asplenium (Euasplenium) ruwenzoriense**, *Baker* [Filices-Polypodiaceæ]; ad *A. rutifolium*, Blume, accedit; differt pinnis multijugis angustioribus, soris ad dimidium inferius venarum restrictis.

Lamina oblongo-lanceolata, 2–3 ped. longa, simpliciter pinnata, modice firma, utrinque viridis, glabra; rhachis nuda, sordide viridis: pinnæ lineares, sessiles, multijugæ, acuminatæ, crenatæ, 4–5 poll. longæ, deorsum 6–7 lin. latæ, basi subæqualiter cuneatæ: inferiores haud reductæ; venæ ascendentes, furcatæ. *Sori* linearioblongi, 2 lin. longi, a margine pinnarum remoti, ad dimidium inferius venarum restricti. *Indusium* latum, firmum, simplex, persistens.

British East Africa. Uganda; Ruwenzori, common in forests, Huata, alt. 6000–8000 ft., *Scott-Elliot*, 7706.

755. **Lygodium Brycei**, *Baker* [Filices-Schizæaceæ]; ad *L. Karstenii*, Kuhn, magis accedit; differt frondibus sterilibus subrigide coriaceis nitidulis rhachibus brunneis.

Lamina decomposita, ampla, pinnis primariis oblongo-deltoideis subrigide coriaceis utrinque viridibus nitidulis parce pilosis 6–8 poll. longis; pinnulæ deltoideæ, petiolatæ, deorsum pinnatæ, sursum caudatæ pinnatifidæ, segmentis ascendentibus contiguis oblongis obtusis; rhachis gracilis, teres, inarticulata, castanea; venulæ liberæ, contiguæ, perspicuæ. *Segmenta fertilia* haud visa.

RHODESIA. Mashonaland; near the Portuguese boundary, drift of Renie river, alt. 2500 ft., *Right Hon. J. Bryce.*

II.—DECADES KEWENSES

PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM.

DECADES XXXIV.–XXXV.

331. **Pterospermum Proteus**, *Burkill* [Sterculiaceæ]; a speciebus affinibus, *P. saigonensi*, Pierre, et *P. insulari*, Pierre, floribus minoribus facile distinguitur.

Arbuscula 8-pedalis. *Rami* juniores pilis rufescentibus dense tecti. *Folia* subovata, polymorpha, nunc fere integra, nunc irregulariter inciso-lobata, hæc basi peltata, illa cordata, hæc apice ob loborum parvorum propinquitatem subito acuminata, illa ad apicem truncata vel cuspidata, pleraque inæquilateralia, 2–4 poll. longa, 2–2½ poll. lata, juniora supra rufo-tomentosa dein glabra, infra pilis brevibus rufo-griseis dense tecta. *Flores* 1–4 ad axillas foliorum; bracteæ lineares, majores 1½ lin. longæ. *Sepala* extus dense rufo-tomentosa, intus pilis longiusculis nitidis ornata, linearia, 10 lin. longa, 1 lin. lata. *Petala* anguste linearia, 7–8 lin. longa, ¾ lin. lata, 7–8-nervia, margine utroque crispula. *Androphorum* ½ lin. longum. *Stamina* petalis paullo breviora, basi fere libera; staminodia dimidia parte superiore hirsuta. *Ovarium* 1½ lin. longum, dense rufo-tomentosum. *Fructus* maturus 5-angulatus, faciebus paullo sulcatus, dense rufo-tomentosus, 1½ poll. longus. *Semina* ala inclusa 1¼ poll. longa.

CHINA. Yunnan; Mengtze, in woods, alt. 5000 ft., *A. Henry*, 10120.

332. **Oxalis dispar**, *N. E. Brown* [Geraniaceæ]; affinis *O. Laureolæ*, Progel, petiolis longioribus et floribus confertis differt.

Suffrutex ramosus, ramis pubescentibus. *Folia* sparsa, pinnatim trifoliolata; petiolus 3–3¾ poll. longus, gracilis, teres, pubescens; foliola subæqualia, 2¾–3 poll. longa, 1–1¼ poll. lata, lanceolata, acuta, basi cuneata, lateralia basi paullo obliqua utrinque molliter

pubescentia. *Pedunculi* 3½–4 poll. longi, graciles, minute pubescentes, apice bifidi ; divisiones 1½–2 lin. longi, dense 7–10-flori. *Pedicelli* fere contigui, 1½ demum 2½ lin. longi, basi articulati, minute pubescentes. *Sepala* 3½ lin. longa, 1–1¼ lin. lata, oblongo-lanceolata, subacuta, pubescentia, viridia, eglandulosa. *Petala* ½ poll. longa, lutea. *Stamina* basi monadelpha ; filamenta edentata, longiora superne puberula. *Ovarium* ovoideum, 5-sulcatum, glabrum. *Capsula* apice breviter 5-cornuta, 15-carinata, carinis 5 primariis puberulis.

GUIANA. Described from a living plant introduced by Messrs. F. Sander & Co., of St. Albans, which flowered in August, 1899.

333. **Dioclea (Pachylobium) megacarpa**, *Rolfe* [Leguminosæ-Phaseoleæ] ; ad *D. violaceam*, Mart., accedit, recedit legumine arcuato oblique corrugato velutino-villoso, sutura superiore vix incrassata.

Rami hirsuti. *Stipulæ* falcato-lanceolatæ, acutæ, hirsutæ, 6–7 lin. longæ. *Folia* trifoliata ; foliola late elliptica, abrupte et brevissime acuminata, utrinque breviter pilosa, 4–5 poll. longa, circa 10-costata, lateralia basi oblique subcordata ; petioli pilosi, 4–5 poll. longi ; stipellæ filiformes, 2½–3 lin. longæ. *Pedunculi* ¾–1¼ ped. longi, crassiusculi, subteretes, ferrugineo-velutini, multiflori. *Bracteas* non vidi. *Nodi* floriferi crassi. *Pedicelli* 3 lin. longi, ferrugineo-velutini. *Bracteolæ* reniformi-orbiculatæ, ferrugineo-velutinæ. *Calyx* late campanulatus, velutinus ; tubus 4–5 lin. longus ; lacinia superior tubo dimidio brevior, lata, brevissime biloba, basi gibbosa ; laciniæ laterales ei paullo longiores, ovatæ, subacutæ ; lacinia infima angustior, tubo æquilonga, apice incurva, subobtusa. *Petala* calyx subduplo longiora ; vexillum late orbiculatum, reflexum, callis conspicuis, ungue 2 lin. longa incurva ; alæ unguiculatæ, oblique obovatæ, laminis basi breviter auriculatis ; carina alis brevior, incurva, subobtusa. *Tubus stamineus* valde incurvus, medio clausus ; antheræ 5 fertiles oblongæ, 5 alternæ parvæ et effœtæ. *Ovarium* dense velutinum. *Legumen* 6–6½ poll. longum, 2¼ lin. latum, incurvum, crasse lignosum, oblique corrugatum et sparse reticulatum, velutino-villosum, sutura superiore vix incrassata. *Semina* 3 vel 4, nitida, hilo lineari semicincta.—*Mucuna ? sp.*, Micheli in *Mém. Soc. Phys. et Hist. Nat. Genève*, xxviii., p. 26.

TROPICAL AMERICA. Trinidad : Cangrehal, St. Annes, *Hart*, 6406. Brazil : *Martius*. Paraguay : Assomption, *Gibert*, 9 ; *Balansa*, 1858a (ex *Micheli*).

A remarkable species whose fruits have long been known, and supposed to belong to a *Mucuna*, but the receipt of complete material from Mr. Hart enables them to be referred to their proper systematic position.

334. **Sophora (Eusophora) Bakeri**, *C. B. Clarke* ex *Baker* [Leguminosæ-Sophoreæ] ; ad *S. heptaphyllam*, Linn., accedit ; recedit foliolis 13–15 obtusis, floribus majoribus, pedicellis calyce floriferis brevioribus.

Frutex, ramulis dense pubescentibus. *Folia* petiolata, imparipinnata, 4–8 poll. longa ; foliola oblonga, obtusa, minute mucronata, 1–2 poll. longa, sessilia, utrinque dense pubescentia. *Racemi* laxi, terminales, pedicellis brevibus dense pubescentibus, bracteis subulatis deciduis. *Calyx* dense pubescens, 3 lin. longus, tubo campanulato, dentibus parvis ovatis. *Corolla* glabra, rubro-lutea, calyce sesquilongiora. *Fructus* longe stipitatus, pubescens, demum dehiscens, teres, seminibus 2–3 oblongis, rostro magno persistente.

INDIA. Behar : Parasnath, alt. 3500–4200 ft., *C. B. Clarke.*

This is the imperfectly-known species, mentioned at the end of the genus in Hooker's *Flora of British India*, ii., p. 251.

335. **Begonia peristegia,** *Stapf* [Begoniaceæ] ; affinis *B. rutilanti*, speciei tantum e descriptione mihi notæ, sed differt foliis magis oblongis haud dentatis nec coriaceis, et bracteis floribusque minoribus.

Caulis ut omnes partes glaber, crassus. *Folia* oblonga, breviter acuminata, basi cordata, uno latere in lobum magnum rotundatum ampliata, crenulata, 6–7 poll. longa, ad 4 poll. lata, carnosula, supra amœne viridia, infra pallida, circiter 10-nervia ; petiolus rubescens, ad 6 poll. longus, apice annulo pilorum brevium alborum cinctus ; stipulæ late ovatæ, acutæ, carinatæ, virides, ad $1\frac{1}{4}$ poll. longæ. *Inflorescentiæ* iteratim dichotomæ, pedunculo ad 6 poll. longo ut rami ramulique plus minus sanguineo ; bracteæ oblongæ, acutæ, 3–4 lin. longæ, caducæ. *Flos masculinus* pedicello tandem ad 3 lin. longo suffultus, in alabastro bracteolis late ovatis acutis carinatis rubescentibus arcte amplexus ; sepala elliptico-rotunda, 6 lin. longa, alba vel roseo-suffusa ; petala oblonga, alba, 3–4 lin. longa ; stamina toro convexo parvo inserta, antheris linearibus 1 lin. longis, connectivo obtuso, filamentis brevibus. *Flos femineus* inter bracteas latissime ovatas $3–3\frac{1}{2}$ lin. longas obtusas cuspidulatas rubescentes ovarium subæquantes et arcte amplectentes dorso rotundatas sessilis ; lobi albi, ad 5 lin. longi, exteriores late elliptici, acuti ; ovarium 3-merum, 3-alatum, alis duabus brevioribus rectangularibus acutis ; styli crassi, subconnati ; stigmata bicruria, indumento breviter papilloso aureo sinum inter crura et spirarum circiter 3 arctarum margines vestiente ; placentæ sectione transversa sub-reniformi-cordatæ.

BRAZIL. Described from a living specimen communicated by Messrs. F. Sander & Co., who grew it in their establishment at St. Albans.

336. **Acomis Lesteri,** *Burkill* [Compositæ-Inuloideæ] ; *A. macræ*, F. Muell., valde affinis, sed ramis aliquo modo tomentosis diversa.

Herba spithamea, e radice ramosissima, ramis gracilibus rigidiusculis aliquo modo tomentosis. *Folia* inconspicua, lineari-subulata, apice acuta, 2–3 lin. longa. *Capitula* longe pedunculata, iis *A. macræ* omnino similia æqualia, 3 lin. diam. ; bracteæ involucri basi excepta scariosæ, lanceolato-ovatæ, apice subacuminatæ,

1 lin. longæ. *Corollæ* tubus basi dilatatus, extus pilis glandulosis ornatus, $\frac{1}{2}$ lin. longus ; lobi ovati, acuti. *Antheræ* apice conspicue mucronatæ, basi tenuissime caudatæ. *Ovarium* extus minute verrucosum. *Pappus* nullus.

AUSTRALIA. North-west Queensland, *Lester*.

337. **Hoya subcalva,** *Burkill* [Asclepiadaceæ] ; ex affinitate *H. purpureæ*, Blume, et *H. Guppyi*, Oliv., ab una coronæ radiis elongatis, ab altera petalis subcalvis, ab utraque foliis tenuioribus differt.

Folia ovato-elliptica, brevissime acuminata, basi rotundata, 4–4$\frac{1}{2}$ poll. longa, 2–2$\frac{1}{2}$ poll. lata, glabra, nervis utrinque sat conspicuis ; petiolus 6–10 lin. longus. *Inflorescentiæ* umbellatæ, 8–10-floræ ; pedunculus et pedicelli ad 1$\frac{1}{2}$ poll. longi, glabri. *Sepala* subtriangularia, $\frac{1}{2}$ lin. longa. *Corolla* ad medium divisa, 10–14 lin. lata, dorsa glabra, intus præcipue ad margines minutissime pustulata nec pilosa ; segmenta anguste triangularia, acuta. *Coronæ* radii 2$\frac{1}{2}$–3 lin. longi, medio vix 1 lin. lati, nitentes.

NEW GUINEA. Kaiser-Wilhelms Land *Hollrung*, 28. SOLOMON ISLANDS. In a collection chiefly from New Georgia, *Officers of H.M.S. "Penguin."*

The specimen collected in New Guinea was sent to Kew under the name of *H. purpurea*, Blume.

338. **Ceropegia perforata,** *N. E. Brown* [Asclepiadaceæ] : *C. cumingianæ*, Decne. affinis, differt foliis minoribus, corolla maculata, coronæ exterioris lobis perforatis.

Herba volubilis, glabra. *Folia* petiolata, 2$\frac{1}{4}$–2$\frac{1}{2}$ poll. longa, 1$\frac{1}{4}$–1$\frac{1}{2}$ poll. lata, ovata vel ovato-oblonga, acuminata, basi breviter cordata, costa subtus marginibusque pilis paucis minutis instructis. *Cymæ* multifloræ, pedunculatæ. *Pedunculus* 1$\frac{1}{2}$ poll. longus. *Bracteæ* minutæ, $\frac{1}{2}$–1 lin. longæ, subulatæ. *Pedicelli* 7–8 lin. longi. *Sepala* 1 lin. longa, subulata. *Corollæ* tubus 13 lin. longus, supra basin globoso-inflatus abrupte curvatus, superne infundibuliformis, ore $\frac{1}{2}$ poll. diam., extra albidus purpureo-maculatus, glaber, intra basi hirtus ; lobi erecti, usque ad apicem cohærentes, 4$\frac{1}{2}$–5 lin. longi, ovato-oblongi, obtusi, valde replicati, glabri, pallide lutei, extra basi purpureo-maculati. *Corona exterior* basi cupularis, 5-loba ; lobi ovati vel deltoideo-ovati, sub apicem perforati, ciliati, lutei, marginibus et ad medium maculis duabus brunneo-purpureis. *Coronæ interioris* lobi 1$\frac{1}{2}$ lin. longi, conniventes, erecti, lineares, lutei, glabri.

NEW GUINEA. Described from a living plant introduced by Messrs. F. Sander & Co., of St. Albans.

339. **Echidnopsis Bentii,** *N. E. Brown* [Asclepiadaceæ] ; proxima *E. dammannianæ*, Sprenger, sed corona omnino differt.

Caules 7–8-angulati, iis *E. dammannianæ* similes, glabri. *Flores* bini. *Pedicelli* $\frac{1}{2}$–$\frac{2}{3}$ lin. longi, glabri. *Sepala* $\frac{3}{4}$ lin. longa, deltoideo-ovata, acuta, glabra. *Corolla* 5 lin. diam., extra viridis

purpureo-maculata, intra intense velutino-purpurea; tubus 1 lin. longus, campanulatus; limbus patens, ad medium 5-lobus; lobi $1\frac{1}{2}$ lin. longi et lati, deltoideo-ovati, acuti, velutino-puberuli, marginibus revolutis. *Corona exterior* cupularis, pentagona, truncata, angulis acutis parum productis, purpurea. *Coronæ interioris* lobi fere $\frac{1}{2}$ lin. longi, erecto-conniventi, leviter clavati, obtusi, basi fundo coronæ exterioris adnati.

ARABIA. Described from a living plant sent by the late Mr. Theodore Bent, in 1897, to the Royal Gardens, Kew, where it flowered in August, 1898.

340. **Caralluma torta**, *N. E. Brown* [Asclepiadaceæ]; ab omnibus speciebus lobis corollæ in columnam tortis valde distincta.

Caulis obtuse tetragonus, 4–5 lin. crassus, rugulosus, minutissime pubescens; anguli leviter dentati. *Folia* $1\frac{1}{2}$ lin. longa, lanceolato-subulata, pubescentia. *Flores* solitarii, breviter pedicellati, extra pubescentes. *Sepala* $\frac{3}{4}$–1 lin. longa, reflexa. *Corolla* 8–$8\frac{1}{2}$ lin. longa; lobi lineares, basi in globum 5-fenestratum arcuati, superne tortuosi in columnam longam tenuem apice globoso-clavatam cohærentes, intra glabri, virides, basi brunneo-purpureo maculati. *Corona* brunneo-purpurea, apicibus loborum pallidis; lobi exteriores fere $\frac{1}{2}$ lin. longi, erecti, profunde bifidi; lobi interiores antheris incumbentes et iis longiores, plani, oblongi, obtusi, dorso in calcar plus minus producti.

SOUTH ARABIA or SOCOTRA. Described from a living plant sent to Kew by the late Mr. Theodore Bent, in 1897, without a precise statement as to its locality.

341. **Bœa hians**, *Burkill* [Gesneraceæ]; a *B. Lawesii*, H. O. Forbes, caulibus foliisque pilis fulvis densissime tectis inter alia distincta.

Caules elongati, pilis fulvis densissime tecti. *Folia* opposita, ovata, apice acuminata, acuta, basi rotundata, 3–$5\frac{1}{2}$ poll. longa, 2–$2\frac{1}{2}$ poll. lata, supra pilis aliquo modo rigidis fulvo-canescentibus tecta, infra pilis mollioribus densius tecta; petiolus $\frac{3}{4}$–$1\frac{1}{2}$ poll. longus, ut caules hirsutus. *Inflorescentia* laxa, longe pedunculata, 10–15-flora; pedunculus 6–8 poll. longus, sparse hirsutus; pedicelli $\frac{1}{2}$–1 poll. longi, hirsuti; bracteæ lineares. *Calycis* 5-secti segmenta linearia vel ovato-linearia, glabra. *Corolla* hians; tubus perbrevis; petala duo superiora ad $\frac{2}{3}$ coalita, labium superius 4 lin. longum alte bifidum margine leviter sinuatum formantia, inferiora tria labium inferius $\frac{1}{2}$ poll. longum leviter trilobum apice obtusum formantia. *Staminum* filamenta incurva, stylo superata.

NEW GUINEA. Between the South Coast and the Owen Stanley Mountains, *Burke*, 356.

342. **Clerodendron Curtisii**, *H. H. W. Pearson* [Verbenaceæ-Viticeæ]; species inter affines distinctissima; a *C. nutante*, Wall., panicula breviore confertioreque, foliorum characteribus et caule fistuloso conspicue differt.

Frutex nanus. *Caulis* fistulosus, inermis, striatus, minutissime puberulus. *Folia* opposita, petiolata, membranacea, obovata, obtuse acuminata, basi rotundata, glandulosa, supra glabrescentia, subtus minutissime pubescentia, integra, nervatione prominula, nervis primariis utrinque 9–12, ascendentibus sub margines arcuatim conniventibus, nervis secondariis subparallelis; petioli crassiusculi, striati, minutissime puberuli, $2\frac{1}{2}$–3 poll. longi; laminæ $4\frac{1}{4}$–9 poll. longæ, $2\frac{1}{2}$–$4\frac{1}{4}$ poll. latæ. *Panicula* terminalis, multiflora, bracteata, ramulis angulatis pubescentibus, 5–6 in. longa, $2\frac{1}{2}$ poll. diametro. *Bracteæ* inferiores frondosæ; superiores subulatæ, pubescentes, 1 lin. longæ. Flores aurantiaci (fide *Curtis*), pedicellis pubescentibus gracilibus suffulti. *Calyx* campanulatus, alte 5-lobatus, extus minute pubescens, intus puberulus, utrinque squamis peltatis multis vestitus; tubus 1–$1\frac{1}{2}$ lin. longus; lobi lanceolati, acuminati, aperte 3-nervati, marginibus ciliatis, 2–3 lin. longi, 1–$1\frac{1}{4}$ lin. lati. *Corollæ* tubus rectus, cylindricus, 8–10 lin. longus, utrinque parce puberulus, glandulis clavatis sessilibus minutis permultis instructus; lobi inæquales, subtiles, obovati vel elliptici, basi ad ungues angustati, ad margines minute ciliati, cæterum glabri, circiter 3 lin. longi. *Stamina* præfloratione intra galeam circinato-convoluta, longe exserta.

Malaya. Dinding Islands: Bruas, in damp places, *Curtis* 3441.

343. **Aristolochia gracillima**, *Hemsley* [Aristolochiaceæ]; inter species sinenses ad *A. gentilem*, Franch., magis accedit (ex descriptione) sed floribus dimidio minoribus, perianthio non setaceo-acuminato; etiam ad *A. Pistolochiam*, Linn., accedit, differt caulibus prostratis foliis cordato-reniformibus.

Herba prostrata, undique glaberrima, caulibus gracillimis vel fere filiformibus pedalibus, internodiis quam foliis brevioribus. *Folia* longe graciliterque petiolata, membranacea, rotundato-cordata vel cordato-reniformia, 1–$1\frac{1}{2}$ poll. lata, integra, subtus pallidiora, subquinquenervia; petioli fere capillares, sæpius 1–$1\frac{3}{4}$ poll. longi. *Flores* axillares, solitarii, circiter semipollicares, quam pedunculi capillares longiores. *Perianthium* sub-bilabiatum, tubo basi inflato-globoso deinde abrupte constricto superne cylindrico, labio postico ovato-oblongo obtuso quam tubo saltem dimidio breviore, labio antico brevissimo truncato emarginato. *Columna stylaris* brevissima, discoidea, brevissime 6-lobulata. *Capsula* (matura non visa) glabra, subglobosa, vix $\frac{1}{2}$ poll. diametro, angustissime 6-alata.

China. Yunnan; Mengtze, in one shady spot only, at 4700 ft., *A. Henry*, 11,222. "Prostrate on the ground."

344. **Elatostema peltatum**, *Hemsley* [Urticaceæ-Urticeæ]; species ob folia peltata insignis.

Herba glabra vel glabrescens, circiter pedalis, caulibus debilibus ascendentibus. *Folia* petiolata, tenuia, oblique ovato-oblonga, cum petiolo 3–6 poll. longa, paullo supra basin peltata, obscure remoteque crenulata, undulata, acuminata, basi rotundata, creberrime pellucido-punctata, venis primariis paucis inconspicuis;

petioli graciles, 1½–2 poll. longi; stipulæ circiter semipollicares. *Receptacula* masculina (feminea ignota) graciliter pedunculata, pedunculis 1–1½ poll. longis, membranacea, lobata, circiter 9 lin. diametro, bracteis tenuissimis flores singulos vestientibus. *Flores* tetrameri, perianthii segmentis oblongis.

FIJI. Vanua Levu; common in damp shady forests between Mai-mai and Loma-loma, *Horne*.

345. **Hippeastrum (Habranthus) teretifolium,** *C. H. Wright* [Amaryllidaceæ]; *H. roseo*, Baker, proximum, foliis teretibus floribusque duobus pallide roseis differt.

Bulbus pyriformis, brunneus. *Folia* teretia, acuta, 14 poll. longa, 2 lin. diam., parce glauca, synanthia. *Scapus* robustus, 9 poll. altus, 3 lin. diam., inferne vinosus, superne viridis. *Spatha* 1½ poll. longa, ad mediam bifida, vinoso-tincta. *Flores* 2; pedicelli 1¾ poll. longi, virides. *Perianthium* pallide roseum, segmentis oblanceolatis, 2 poll. longis, 6 lin. latis. *Stamina* stylusque ut in ceteris speciebus. *Ovarium* oblongum, 3 lin. longum.

URUGUAY. Monte Video, *Cantera*, 285. Also flowered at Kew in July, 1899.

346. **Cheilanthes (Adiantopsis) trifurcata,** *Baker* [Filices-Polypodiaceæ]; ad *C. radiatam*, R. Br., magis accedit; differt frondibus multo minoribus trifurcatis.

Stipites dense cæspitosi, erecti, gracillimi, 1–2 poll. longi, nitidi, nudi, nigro-castanei. *Lamina* trifurcata, 2–3 poll. longa, rigidula, utrinque viridia, glabra, rhachi nuda nitida castanea; segmenta primaria linearia, simpliciter pinnata, lateralia terminalia minora; segmenta ultima oblonga, obtusa, sessilia, integra, 1½–2 lin. longa, basi cum rhachi parallela. *Sori* globosi, segregati, 1–3-jugi. *Indusium* rotundatum, viridulum, glabrum, persistens.

CENTRAL BRAZIL. Goyaz, *Glaziou*, 22637.

347. **Asplenium (Anisogonium) macrodictyon,** *Baker* [Filices-Polypodiaceæ]; a speciebus reliquis subgeneris *Anisogonii* recedit frondibus magnis tripinnatifidis, maculis magnis costalibus præditis.

Lamina ampla, deltoidea, tripinnatifida, modice firma, utrinque viridia, ad venas pubescentia; pinnæ inferiores oblongo-deltoideæ, 12–15 poll. longæ, 9–10 poll. latæ, profunde pinnatifidæ, pinnulis lanceolatis integris acuminatis deorsum 15–18 lin. latis; venæ in maculis magnis costalibus et iterum prope marginem anastomosantes. *Sori* gracillimi, a margine remoti, secus venas decurrentes. *Indusium* membranaceum, angustum, persistens.—*Arcasplenium grande*, T. Moore, MS.

COLOMBIA. Banks of the Rio Cauca, gathered by one of the collectors of Messrs. Sander, about 1884, and preserved in Herb. T. Moore, now at Kew.

A very distinct species, on which the late Mr. T. Moore proposed to found a new genus to be called *Arcasplenium*.

348. **Asplenium (Anisogonium) Wallisii,** *Baker* [Filices-Polypodiaceæ]; cum *A. hemionitideo*, Baker, habitu omnino congruit; differt venis arcubus costalibus more *Campteriæ* regulariter anastomosantibus.

Lamina oblongo-deltoidea, 18–24 poll. longa, 10–12 poll. lata, apice pinnatifida, deorsum simpliciter pinnata, modice firma, utrinque minute brunneo-pubescentia; rhachis valida, brunneo-pubescens, haud paleacea: pinnæ 3-jugæ, oblongo-lanceolatæ, sessiles, 18–21 lin. latæ, acutæ, integræ vel repandulæ: venæ arcubus costalibus regulariter anastomosantes; venulæ 5–6-jugæ, ascendentes, sæpe anastomosantes. *Sori* graciles, secus venulas decurrentes.

Colombia. Murri, *Wallis*.

349. **Polypodium (Goniophlebium) Bangii,** *Baker* [Filices-Polypodiaceæ]; ad *P. piloselloidem*, Linn., accedit; differt frondibus utrinque paleis peltatis magnis ovatis membranaceis præditis.

Rhizoma gracile, longe repens, paleis lanceolatis appressis membranaceis pallide brunneis. *Lamina* lanceolata, integra, 2–3 poll. longa, 6–9 lin. lata, acuta, basi cuneata, modice firma, utrinque viridia, paleis peltatis ovatis magnis membranaceis pallide brunneis prædita; venæ in areolas costulares pentagonas uniseriatas anastomosantes, venula libera unica centrali inclusa; petiolus brevissimus. *Sori* magni, globosi, superficiales, inter costam et marginem uniseriati.

Bolivia. Yungas, *Bang*, 734.

350. **Acrostichum (Gymnopteris) celebicum,** *Baker* [Filices-Polypodiaceæ]; ad *A. virens*, Wall., magis accedit; differt frondibus multo minoribus, pinnis pinnatifidis basi truncatis antice auriculatis.

Stipites dense cæspitosi, graciles, nudi, 3–6 poll. longi. *Lamina sterilis* oblongo-lanceolata, 5–6 poll. longa, 2–3 poll. lata, simpliciter pinnata, utrinque viridis, dorso obscure pubescens; rhachis nuda, gracilis, pubescens; pinnæ sessiles, lanceolatæ, acutæ, 12–18 lin. longæ, deorsum 5–6 lin. latæ, leviter pinnatifidæ, lobis obtusis, basi truncatæ, antice auriculatæ; venæ pinnatæ, venulis 3–4-jugis apice anastomosantibus. *Lamina fertilis* pinnis angustioribus, stipite longiori.

Celebes. *Curtis*, 431, *Sauvinière*, 61.

III.—NEW ORCHIDS.—DECADE 25.

241. **Masdevallia** (§ **Saccolabiatæ**) **venosa**, *Rolfe;* affinis *M. pusillæ*, Rolfe, sed facile distinguitur labelli epichilio venoso nec profunde saccato.

Folia oblongo-lanceolata, subobtusa, basi attenuata, circa 6 poll. longa, 9 lin. lata; vaginæ spathaceæ, apiculatæ, 1–1¼ poll. longæ. *Scapi* ascendentes, graciles, 5–7 poll. longi, basi flexuosi, vaginis numerosis brevibus obtecti; bracteæ tubuloso-spathaceæ, apiculatæ, carinatæ, 5 lin. longæ. *Sepalorum* tubus late campanulatus, 4 lin. longus; lobi triangulari-ovati, facie puberuli, apice in caudas filiformes 6–8 lin. longas extensi. *Petala* lineari-oblonga, 1½ lin. longa, apice carnosa, subrecurva, papillosa. *Labellum* 2 lin. longum; hypochilium elliptico-oblongum, angulatum, bicarinatum, medio profunde canaliculatum; epichilium orbiculare, nec saccatum, facie carinis radiatis et callo medio instructum. *Columna* clavata, incurva, 1½ lin. longa.

COLOMBIA.

Introduced by Messrs. F. Sander & Co., with whom it flowered in June, 1899. The perianth is straw-yellow, densely spotted and more or less suffused at the base with dull purple, and the lip dull red-purple.

242. **Dendrobium** (§ **Pedilonum**) **capituliflorum**, *Rolfe;* species ex affinitate *D. purpurei*, Roxb., a quo differt floribus minoribus, sepalis petalisque angustioribus.

Pseudobulbi elongati, sulcati, foliosi, 6–10 lin. longi. *Folia* lanceolato-oblonga, subobtusa, 2½–3½ poll. longa, 8–11 lin. lata. *Racemi* laterales, dense ovoidei vel capituliformes, multiflori; bracteæ triangulares vel lanceolatæ, acutæ, 1–1½ lin. longæ; pedicelli 3–4 lin. longi. *Sepalum* posticum ovato-lanceolatum, subacutum, 2½ lin. longum; lateralia subsimilia, basi in mentum oblongum obtusum 2 lin. longum extensa. *Petala* oblongo-lanceolata, apiculata, 2 lin. longa. *Labellum* lanceolato-oblongum, acutum, 4½ lin. longum, integrum, concavum, infra medium paullo constrictum; discus lævis. *Columna* lata, 1 lin. longa.

NEW GUINEA.

Introduced by Messrs. F. Sander & Co., and flowered in their establishment in March, 1899. The flowers, which are borne in dense axillary heads, are greenish white, with the column and disc of the lip bright green.

243. **Dendrobium** (§ **Pedilonum**) **puniceum**, *Rolfe;* species ex affinitate *D. rutriferi*, Reichb. f., a quo differt floribus racemosis, petalis elliptico-oblongis.

Caules elongati, teretes, striati, 1½–2½ ped. alti. *Folia* non vidi. *Racemi* breves, multiflori, circa 1¼ poll. longi; bracteæ oblongo-lanceolatæ, acutæ, 1 lin. longæ; pedicelli 6–7 lin. longi. *Sepalum* posticum late ovato-oblongum, subobtusum, 3 lin. longum; lateralia late triangulari-ovata, subobtusa, basi connata et cum

columnæ pede in mentum conico-oblongum extensa. *Petala* elliptico-oblonga, subobtusa, 3 lin. longa. *Labellum* linear-oblongum, concavum, $5\frac{1}{2}$ lin. longum, margine prope apicem valide inflexo minute denticulato, medio subconstrictum et callo transverso membranaceo arcuato ornatum. *Columna* lata et brevissima. *Mentum* $3\frac{1}{2}$ lin. longum.

NEW GUINEA.

Imported with *Dendrobium atroviolaceum*, Rolfe, by Messrs. F. Sander & Co., and flowered in their establishment at St. Albans in October, 1898. The flowers, together with the pedicels, are light rose-pink, with light yellow tips to the sepals and petals. They are remarkably like those of *D. nutriferum*, Reichb. f., but are borne in racemes, not in axillary fascicles.

244. **Dendrobium quinarium**, *Rolfe ; D. tetragono*, Lindl., affine, sepalis petalisque latioribus nec attenuatis, labello brevi nec recurvo, mento breviore.

Pseudobulbi fusiformi-clavati, tetragoni, 6–9 poll. longi, basi graciles, apice diphylli. *Folia* oblongo-lanceolata, acuta. *Racemi* subterminales, breves, biflori ; bracteæ ovato-oblongæ, acutæ, 3–4 lin. longæ ; pedicelli circa 1–$1\frac{1}{4}$ poll. longi, læves. *Sepala* oblongo-lanceolata, subacuta, 13–14 lin. longa ; lateralia dorsali basi paullo latiora. *Petala* oblongo-lanceolata, subacuta, sepalis subæqualia. *Labellum* subtrilobum, 9 lin. longum, expansum 9 lin. latum, lobis lateralibus rotundatis, intermedio triangulari acuto ; discus quinque-carinatus, basi cum dente carnoso triangulari acuto, carinis lateralibus apice plus minus dentatis. *Columna* brevis, latissima. *Mentum* breve, obtusum, 2 lin. longum.

NEW GUINEA.

Introduced with *Dendrobium Johnsoniæ*, F. Muell., by Messrs. Hugh Low & Co., and flowered in their nursery in July, 1898. Flowers light yellow, with several light brown nerves in front of the lip.

245. **Dendrobium inæquale**, *Rolfe ;* ad *D. euphlebium*, Reichb. f. accedit, differt floribus majoribus, labello plano trilobo.

Pseudobulbi tetragoni, 8–11 poll. longi, 3–4 lin. lati, basi graciles, apice diphylli ; internodia numerosa, 5–6 lin. longa. *Folia* (immatura) oblongo-lanceolata, acuta. *Flores* laterales, solitarii, membranacei ; pedicelli 3 lin. longi, basi bracteis oblongis membranaceis obtecti. *Sepala* oblongo-lanceolata, acuta, 10 lin. longa ; lateralia in mentum breve obtusum extensa. *Petala* sepalis subsimilia, paullo angustiora. *Labellum* latum, trilobum, 6 lin. longum, 9 lin. latum ; lobi laterales ovato-oblongi, obtusi ; lobus intermedius late triangularis, acutus ; discus lamello oblongo erecto instructus. *Columna* lata, 2 lin. longa.

NEW GUINEA.

Introduced by Messrs. F. Sander & Co., who flowered it in March last. It is an anomalous species, apparently most allied

to *D. euphlebium*, Reichb. f., though very different in the shape of the lip. The flowers are white, veined on the front of the lip with purple, and are apparently very fugacious. They are produced singly from cavities at alternate nodes on the two adjacent exterior faces of the pseudobulbs, a character found in all the ten pseudobulbs on the plant.

246. **Cirrhopetalum appendiculatum**, *Rolfe*; inter affines ad *C. merguensem*, Par. et Reichb. f., accedit; differt sepalis lateralibus longe attenuatis.

Rhizoma repens. *Pseudobulbi* subdistantes, oblongi, subcostati, 1 poll. longi, 5 lin. lati, monophylli. *Folia* elliptica, emarginata, coriacea, sessilia, 2 poll. longa, 11 lin. lata. *Scapi* erecti, 3 poll. alti, quisque medio vagina lanceolata carinata obtectus uniflorus; bractea lanceolata, acuminata, carinata, 5 lin. longa. *Sepalum* posticum ovatum, concavum, apice caudato-setiferum, 8 lin. longum, prope apicem appendicibus foliaceis instructum; lateralia basi libera, dein fere ad apicem connata, longe attenuato-caudata marginibus involutis, apice bifida, filiformia, $2\frac{3}{4}$–3 poll. longa. *Petala* falcato-incurva, lineari-oblonga, acuminata, 4 lin. longa, prope apicem appendicibus foliaceis instructa. *Labellum* magnum, carnosum, recurvum, ovato-oblongum, obtusum, glabrum, $4\frac{1}{2}$ lin. longum, basi concavum, marginibus erectis, disco tricarinato. *Columna* crassa, 2 lin. longa, dentibus brevibus obtusis.—*C. ornatissimum*, Hook. f. Fl. Brit. Ind. v., 773, ex parte (non Reichb. f.); King & Pantl. in Ann. Roy. Bot. Gard. Calc. viii. 95, t. 133.

INDIA: Sikkim, in warm valleys, *Pantling*, 197.

Flowered in the collection of H. J. Elwes, Esq., Colesbourne, Gloucestershire, in October, 1896. The dorsal sepal and petals are pale yellow, of these the dorsal sepal has three dull purple veins and a few spots near the margin, the petals have a single vein, and all are terminated by numerous purple leaf-like appendages attached by a filiform base. The lateral sepals are speckled with reddish purple on a lighter ground. The lip is rosy purple with dark purple margins, keels and numerous spots. It is very distinct from *C. ornatissimum*, Reichb. f., with which it has been confused.

247. **Panisea tricallosa**, *Rolfe*; ad *P. apiculatam*, Lindl., accedit; recedit labelli disco tricalloso.

Rhizoma validum. *Pseudobulbi* approximati, globosi vel ovoidei, diphylli, 6–7 lin. longi. *Folia* breviter petiolata, oblongo-lanceolata, acuta, 2–3 poll. longa, 4–7 lin. lata. *Flores* in scapo solitarii; scapi $\frac{3}{4}$–1 poll. longi, basi vaginis imbricatis obtecti. *Sepala* ovato-oblonga, apiculata, carinata, 6–7 lin. longa, lateralia obliqua. *Petala* elliptico-oblonga, apiculata, 6–7 lin. longa. *Labellum* obovatum, subapiculatum, 7–8 lin. longum, 4–5 lin. latum, basi late unguiculatum, sigmoideo-curvatum; discus trinervis, tricallosus. *Columna* clavata, marginata, 3 lin. longa.

ASSAM.

Flowered in the Royal Botanic Gardens, Glasnevin, in April, 1896. The flowers are pale translucent yellowish green, with three yellow calli on the disc, tipped with brown.

248. **Catasetum quadridens,** *Rolfe;* affinis *C. cornuto*, Lindl., sed ab omnibus speciebus generis rostello quadridentato differt.

Pseudobulbi ovoidei, 1½–2 poll. longi, 2–3-phylli. *Folia* lanceolata, acuminata, circa 6 poll. longa, 1¼ poll. lata. *Scapus* masculinus suberectus, 6 poll. longus; flores circa 4; bracteæ lanceolato-oblongæ, acutæ, 3–4 lin. longæ; pedicelli 8–10 lin. longi. *Sepala* lanceolato-oblonga, acuta, incurva, concava, circa 10–12 lin. longa; lateralia patentia. *Petala* sepalis similia. *Labellum* 8 lin. longum, deltoideo-oblongum, apiculatum, lateribus reflexum, spinoso-dentatum, prope apicem in cristam oblongam subobtusam tumescens, supra basin umbonatum, infra medium leviter concavum. *Columna* clavata, 9 lin. longa, apice rostrata; rostelli antennæ graciles, æqualiter incurvæ, approximatæ, utrinque dente brevi infra antennam instructæ.

HABITAT UNKNOWN.

A plant of this species was purchased at the sale of the Hon. Walter Rothschild's collection, and flowered at Kew, in December, 1898. The flowers are remarkable for the presence of a pair of short, acute teeth, situated at the lower angles of the abortive stigma, in addition to the usual pair of antennæ. The flowers are light green, blotched all over with dark brown.

249. **Ornithocephalus multiflorus,** *Rolfe;* ab omnibus speciebus differt pseudobulbis, etiam (*O. grandifloro*, Lindl., excepto) foliis non ensiformibus.

Planta dense cæspitosa. *Pseudobulbi* ovoidei, basi et apice diphylli, 2½–3½ lin. longi. *Folia* lanceolata vel oblongo-lanceolata, subacuta, subcarnosa, ¾–1½ poll. longa, 2–3 lin. lata. *Racemi* graciles, subflexuosi, 3¼–4½ poll. longi, multiflori; bracteæ lanceolatæ, acutæ, ¾–1½ lin. longæ. *Pedicelli* 2½–3 lin. longi, graciles. *Sepala* reflexa, ovata, subobtusa, concava, ¾ lin. longa. *Petala* patentia, late unguiculata, 1½ lin. longa; limbus reniformi-orbicularis, minutissime crenulatus, 1½ lin. latus. *Labellum* pandurato-oblongum, obtusum, supra medium concavum, 2 lin. longum; callus magnus, suborbicularis, apice incurvo-apiculatus. *Columna* lata; alis falcato-linearibus acutis ½ lin. longis; rostellum lineare, incurvum, ¾ lin. longum.

BRAZIL. *Glaziou*, 17789; *Binot.*

In cultivation at Kew, where it flowered in June, 1898. It is a very graceful and floriferous species. The flowers are white, with the exception of the incurved apex of the crest, which is bright green. In habit it is remarkably distinct.

250. **Aeranthes caudata,** *Rolfe;* affinis *A. grandifloræ*, Lindl., differt scapo graciliore, floribus minoribus, sepalis petalisque longe caudatis, labelli calcare cylindraceo.

Folia lineari-oblonga, apice subattenuata, subobtusa, 7½ poll. longa, 10 lin. lata, submembranacea. *Scapus* gracilis, elongatus, 10 poll. longus, apice breviter ramosus, triflorus ; bracteæ lanceolatæ, acuminatæ, 3–4 lin. longæ ; pedicelli 7 lin. longi. *Sepala* triangulari-ovata, in caudas graciles longissime extensa, 4½ poll. longa, basi 4 poll. lata. *Petala* sepalis similia, sed caudæ duplo breviores. *Labellum* rhomboideo-ellipticum, apice in caudam brevem extensum, 2 poll. longum, medio 8 lin. latum ; calcar cylindraceum, obtusum, incurvum, 4½ lin. longum. *Columna* 2 lin. longa.

MADAGASCAR.

A distinct and remarkable species which flowered at the Royal Botanic Gardens, Glasnevin, in August last. The sepals and petals are pale pellucid green, and the lip greenish white.

IV.—FUNGI EXOTICI, III.

RUSSIAN ASIA.

ASCOMYCETES.

Phyllachora Heraclei, *Fuckel, Symb. Myc.* (1869) p. 219.

TURKESTAN. On *Heracleum lanatum*, Michx., Alatau Mts., Little Kebir river, *Regel*.

HYPHOMYCETES.

Coniothecium Acanthophylli, *Massee*. *Pulvini* primo epidermide tecti, dein erumpenti-superficiales, effusi, sæpe totam matricem obtegentes, nigerrimi, e globoso subhemisphærici, minuti, 300–400 μ diam. *Conidia* subglobosa, trigona vel e mutua pressione difformes, 2–5-cellulosa, ad confluentiam cellulorum non vel levissime constricta, flavo-brunnea, episporio glabro, 40–60 μ diam.

TURKESTAN. On stem and leaves of *Acanthophyllum spinosum*, C. A. Mey., near Merv, *Regel*.

CHINA.

ASCOMYCETES.

Gnomoniella Coryli, *Sacc. Syll.* i. (1882) no. 1590.

SZECHUEN. On living leaves of *Corylus Colurna*, Linn., var *chinensis*, Burkill North Wushan, *A. Henry* 7111.

India.

Basidiomycetes.

Lepiota cepæstipes, *Sacc. Syll.* v. (1887) p. 43.
Bombay Presidency. On the ground, Poona, *Woodrow*, 57.
Not uncommon in hot-houses in England.

Lepiota Beckleri, *Sacc. Syll.* v. (1887) p. 56.
Bombay Presidency. On the ground, Poona, *Woodrow*.

Lepiota excoriata, *Karsten., Skand. Hattsv.* i. (1879) p. 8.
Bengal Presidency. On the ground, Poona, *Woodrow*, 63.

Pleurotus membranaceus, *Massee* (*sp. nov.*). *Pileus* membranaceus, dimidiatus, flabelliformis, margine ut plurimum lobatus, albus, glaber, 5–7 cm. latus. *Lamellæ* subconfertæ, angustæ, albæ, postice decurrentes. *Sporæ* ovato-oblongæ, hyalinæ, 9–10 × 5–6 μ.

Bombay Presidency. On trunks, Poona, *Woodrow*, 80.

Allied to *Pleurotus versiformis* Berk., which differs in having a short stem and decurrent gills.

Pholiota indica, *Massee* (*sp. nov.*). *Pileus* carnosus, e conico-campanulato expansus, siccus, squamis concentricis adnatis ornatus, brunneolus, versus marginem albidus, 3–8 cm. latus. *Lamellæ* adnexæ, latæ, subdistantes, umbrinæ. *Sporæ* subglobosæ, umbrinæ, 9–10 × 7–8 μ. *Stipes* farctus, æqualis, basi subincrassatus, albus, usque ad annulum remotum peronatus.

Bombay Presidency. On the ground, Poona, *Woodrow*, 58.

Allied to *Pholiota radicosa*, Bull.

Flammula sapinea, *Karsten, Skand. Hattsv.* i. (1879) p. 410.

Punjab. Chitral Relief Expedition, Mirga Forest, 9000 ft. *Duthie*, 17,670.

Bolbitius grandiusculus, *Cooke & Massee in Grevillea*, xviii. (1890), p. 53.

Bombay Presidency. On the ground, Poona, *Woodrow*, 60.

Agaricus Woodrowii, *Massee* (*sp. nov.*). *Pileus* subglobosus, glaber, primitus lævis, dein centro rimoso-areolatus, ex albido fuscescens, 3–5 cm. latus ; caro 1 cm. lata, fuscescens. *Lamellæ* confertæ, liberæ sed approximatæ, umbrinæ. *Sporæ* ellipticæ, glabræ, umbrinæ, 8 × 5 μ. *Stipes* ventricosus, albidus, deorsum fuscescens, glaber, 3-5 cm. longus ; annulus superus, evanescens.

Bombay Presidency. On the ground, Poona, *Woodrow*, 61.

Edible. Allied to *Agaricus silvaticus*, Schaeff. ; distinguished from this and all known species by the ventricose stem, and crowded approximate gills.

Stropharia merdaria, *Karsten, Skand. Hattsv.* i. (1879) p. 491.
Bombay Presidency. On dung, Poona, *Woodrow*, 52.

Psathyra nana, *Massee* (*sp. nov.*). *Pileus* e convexo explanatus, lævis, glaber, siccus, albidus, 1–2 cm. latus. *Lamellæ* confertæ, angustæ, annexæ, purpureo-brunneæ, acie integræ concolores. *Sporæ* ellipsoideæ, læves, purpureo-brunneæ, 9 × 7 μ. *Stipes* 3 cm. longus, vix 1 mm. crassus, fistulosus, candidus.

BOMBAY PRESIDENCY. On the ground, Poona, *Woodrow*, 56.

Allied to *Psathyra obtusata*, Fries.

Polystictus Gleadowii, *Massee*, (*sp. nov.*). *Pileus* semiorbicularis, dimidiatus, sessilis, e convexo planus vel depressus, niveo-tomentosus, dein subglabrescens, margine incurvo, 4–5 cm. latus. *Pori* angulati, albo-straminei. *Caro* fibrosa, alba, tenuissima. Sporæ albidæ, ellipticæ, 6–7 × 4 μ.

N. W. PROVINCES. On dead wood, Dehra Dun, *Gamble*, 27,481.

Allied to *Polystictus virgineus*, Cooke, but differing in the snow-white tomentose pileus, and smaller pores, whose average diameter is $\frac{1}{3}$ mm.

Hydnum coralloides, *Scop.*, *Flora Carn.* ii. (1760) p. 472.
PUNJAB. Chitral Relief Expedition, *Duthie*, 17,668.

Stereum nitidulum, *Berk. in Hook. Lond. Journ.*, Bot. ii. (1843) p. 638.

BOMBAY PRESIDENCY. On rotten wood, Poona, *Woodrow*, 55.

Hirneola polytricha, *Fries in Kongl. Vetensk. Akad. Händl.* 1848, p. 121.

BOMBAY PRESIDENCY. On dead wood, Poona, *Woodrow*, 50.

Battarrea lævispora, *Massee* (*sp. nov.*). *Peridium* globoso-depressum, glabrum, albidum, 4–6 cm. latum. *Gleba* croceo-ochracea. *Stipes* undique squamis paleisve tectus, deorsum attenuatus, 8–12 cm. longus. *Volva* libera, magna, vaginalis, limbo lobata, albida. *Sporæ* dilute ochraceæ, subglobosæ, glabræ, 6–7 μ diam.

BOMBAY PRESIDENCY. On the ground, Poona, *Woodrow*, 64.

Allied to *Battarrea Muelleri*, Kalchbr. ; from which it differs in the smooth spores and ample volva.

Geaster fimbriatus, *Fries*, *Syst. Myc.* iii., (1829) p. 16.

PUNJAB. On the ground, Chitral relief expedition, *Duthie*, 17,668.

ASCOMYCETES.

Humaria coccinea, *Massee* (*sp. nov.*). *Ascomata* ·5–1·5 cm. lata, gregaria vel subsparsa, primo subglobosa, dein explanata, extus margineque pallida, laxe pilosa; disco coccinea vel aurantio-rubra. *Asci* cylindracei, iodo haud tincti, 270 × 17 μ, octospori. *Sporæ* monostichæ, hyalinæ, ellipsoideæ, diu glabræ, dein verrucosæ, continuæ, 22–23 × 14–15 μ. *Paraphyses* clavatæ, septatæ.

N.W. PROVINCES. Garhwal, at 7,000 ft., *Gamble*, 27,289.

Closely allied to *Humaria melaloma*, Massee, especially in having the margin and outside sparsely covered with short brown sparingly septate hairs; differing in the much larger warted spores.

Chlorosplenium æruginosum, *De Not., Prop. Rett. Discom.* (1864) p. 22.

N.W. PROVINCES. Mandali, Zaunsar, at 8–9,000 ft., *Duthie*, on fallen wood that had become deep verdigris green, due to the presence of the fungus. Ascophores of the fungus were also present.

HYPHOMYCETES.

Sporodesmium Brassicæ, *Massee* (*sp. nov.*). *Macula* amphigenæ, nebulosæ, indeterminatæ, sæpe confluendo difformes, olivaceo-griseæ. *Sporæ* obclavatæ, pallide brunneæ, septatæ, ad septa vix constrictæ (septis 7–9 transversalibus, nonnullis etiam longitudinalibus), 160–200 × 25–35 μ.

BENGAL. On the pods of *Brassica campestris*. Linn., var. *Sarson*, Prain, Tehroot, *Watt*.

A parasite doing considerable damage to the crop. The sporophores are fasciculate and short.

Rhinocladium corticolum, *Massee* (*sp. nov.*). *Acervuli* orbiculares, vel irregulares, 2–3 cm. diam., effuso-superficiales, velutini, nigro-olivacei. *Hyphæ* steriles repentes, dense intricato-ramosæ, septatæ, olivaceæ, 5–7 μ crassæ, hic inde hyphas fertiles gerentes; hyphæ fertiles erectæ, concolores, apices versus pallescentes. Conidia ad apice producta, globosa, olivacea, episporio densissime et minutissime tuberculata, 15–18 μ diam.

BOMBAY PRESIDENCY. On the bark of a living mango, *Mangifera indica*, Linn., Poona, *Woodrow*.

The numerous patches of the fungus at times almost cover the bark at diseased spots.

CEYLON.

ASCOMYCETES.

Leciographa Brownii, *Massee* (*sp. nov.*). *Ascomata* erumpentia, elongata, recta seu torta, applanata, nigra, 4-6 × 2 mm. *Asci* elongato-clavati, octospori. *Sporæ* oblongo-fusoideæ, 5–7-septatæ, brunneæ, 35–40 × 9–10 μ. Paraphyses filiformes, ramosæ, ascos superantes.

On dead bark, *Brown*.

Distinguished from its allies by the much larger spores. Apothecia gregarious.

Straits Settlements.

Basidiomycetes.

Leptonia bicolor, *Massee* (*sp. nov.*). *Pileus* submembranaceus, conicus, umbilicatus, lævis, glaberrimus, pallide roseus, 3–5 cm. altus. *Lamellæ* confertæ, annexæ, angustæ, albidæ, dein incarnatæ. *Sporæ* oblongæ, nodulosæ, incarnatæ, 10–11 × 7 μ. *Stipes* fistulosus, sursum attenuatus, glaber, nitens, pileo concolor, 8–10 cm. longus, 6–8 mm. crassus.

Singapore. On the ground, *Ridley*.

Most nearly allied to *L. tricolor*, Massee. These Eastern species differ essentially from European forms in the absence of blue or violet colour of the stem.

Leptonia tricolor, *Massee* (*sp. nov.*). *Pileus* submembranaceus, e convexo plano-depressus, virgatus, lilacinus, 2–3 cm. latus, margine striatulo incurvo. *Lamellæ* annexæ, angustæ, subdistantes, incarnatæ, acie serrulatæ. *Sporæ* subglobosæ, apiculatæ, 8–9 μ diam. *Stipes* farctus, sursum attenuatus, albidus, glaber, 5–6 cm. longus, 6–7 mm. crassus.

Penang. On the ground, *Ridley*.

A showy and distinct species, distinguished by the virgate lilac pileus, flesh-coloured gills, and white stem. Allied to *L. serrulata* Fries, but nearest to *L. bicolor*, Massee.

Xerotus papyraceus, *Berk. in Hook. Fl. Tasm.* ii., (1860), p. 250, tab. clxxxii., fig. 2.

Penang. On brickwork and wood, *Ridley*.

Clavaria ornithopoda, *Massee* (*sp. nov.*). *Caulis* tenuis, 1 cm. longus, ad apicem ramos 3–5 flabelliformes gerentes, ramuli ultimi terminales, aculeati, nodulosi, arcuati; rami ramulique pallide ferruginei (in spiritu vini). *Basidia* anguste clavata, tetraspora. *Sporæ* ellipticæ, hyalinæ, glabræ, 6–7 × 4 μ.

Penang. On the ground, *Ridley*.

A remarkable species, each primary branch terminating in 3–4 tapering nodulose curved branchlets, the whole resembling a partly closed bird's foot.

Clavaria bicolor, *Massee* (*sp. nov.*). *Caulis* robustus, brevis, circiter 1 cm. crassus longusque; rami ramulique numerosi, cylindracei, pallide umbrini, apicibus cristato-multifidis amethystinis. *Basidia* clavata, tetraspora. *Sporæ* hyalinæ, subglobosæ, asperatæ, 9 × 7–8 μ diam.

Penang. Garden jungle, *Ridley*.

Entire fungus 7–8 cm. high; allied to *C. amethystina*, Bull.

Clavaria fragilis, *Holmsk. Fungi Dan.* i. (1799) p. 7.

Singapore. *Ridley*.

Boletus Ridleyi, *Massee* (*sp. nov.*). *Pileus* convexo-planus, lævis, glaber, citrinus, 2–3 cm. latus; caro alba, lutescens, sapore dulcis.

Tubuli flavo-virentes, stipiti adnati, 3–4 mm. longi ; pori angulati, ampli. *Sporæ* flavo-viridæ, ellipticæ, 7–8 × 5 μ. *Stipes* solidus, subæqualis, glaber supra annulum evanescentem albus, infra citrinus, 4 cm. longus, 5–7 mm. crassus.

SINGAPORE. On the ground, Garden jungle, *Ridley*.

A neat species, characterised by the yellow colour, and short spores. Allied to *B. chrysenteron*, Fries, but differing in the glabrous pileus and much shorter spores.

Favolus ruficeps, *Berk. & Broome in Journ. Linn. Soc. (Bot.)*, xiv. (1875), p. 57.

SINGAPORE. On wood, *Ridley*.

ASCOMYCETES.

Rosellinia echinata, *Massee (sp. nov.)* *Perithecia* majuscula, 1–1·5 mm. diam., densissime aggregata, globoso-depressa, superne convexo-applanata, centro papillata, atra, fragilia, echinata. *Asci* cylindracei, apice truncati, incrassati, octospori. *Sporæ* oblique monostichæ, fusiformi-naviculares, utrinque acutissimæ, opace brunneæ, 1–2-guttulatæ, glabræ, 90–100 × 12 μ. *Paraphyses* filiformes, subinde ramosæ, 2·5 μ crassæ.

SINGAPORE. On roots of a tree of *Ficus dubia*, Wall., and other plants near it. Botanic Gardens, *Ridley*.

A very destructive parasite, closely allied to *Rosellinia radiciperda*, Massee, and *R. Necatrix*, Prill., and spreading in a similar manner by means of subterranean mycelium, and conidial fruit. The following note accompanied the specimens. "Some months ago all the shrubs in a jungly bit of the garden at the foot of a large *Ficus dubia* began to die, turning black, and the long roots of the *Ficus* did the same. At first I thought some weed-killer had been carelessly thrown into the wood, but the thing increased, every plant withered and died, looking as if acid or boiling water had been thrown upon it. All kinds of Dicotyledonous shrubs and herbs, rattans, dracaenas, and even some dieffenbachias turned black and rotted. At last the thing developed on the fig roots, and on the collar and roots of all the trees and shrubs around, and appears to be a deadly fungus."

QUEENSLAND.

ASCOMYCETES.

Glœocalyx, *Massee (gen. nov.)*. *Ascomata* subgelatinosa, sessilia, cupulata, extus reticulata, glaberrima. *Asci* cylindracei, apice truncati, octospori. *Sporæ* 1-seriatæ, hyalinæ, ellipticæ, aseptatæ. *Paraphyses* filiformes.

Allied to *Bulgariella*, Sacc., from which the present genus differs in having hyaline spores.

Glœocalyx Bakeri, *Massee (sp. nov.)*. *Ascomata* sessilia, cupulata, subgelatinosa, glabra, sicco cornea, corrugata, extus reticulato-venosa, ubique atra vel disco pallida, 1–2 cm. lata. *Asci*

cylindracei, 320–330 × 17–18 μ. *Sporæ* 1-seriatæ, cylindraceæ, continuæ, curvulæ, hyalinæ, 30 × 10 μ.

On decaying logs Tumbulgum, *Baker*, 9.

Usually caespitose ; substance thin, much contracted and horny when dry. Spores exactly sausage-shaped.

Uredineæ.

Æcidium Plectroniae, *Cooke in Grevillea*, x. (1882), p. 124.

Mount Cook, Endeavour river, on leaves of *Plectronia barbata*, Benth. & Hook., *Bailey*, 1130.

Spheropsideæ.

Phoma sycophila, *Massee* (*sp. nov.*). *Perithecia* minuta, atra, numerosissima, dense congesta, epiphylla, maculas decolorantes longe lateque formantia. *Sporulæ* hyalinæ, cylindraceæ, utrinque obtusæ, rectæ vel curvulæ, 17–20 × 4–4·5 μ.

Mount Cook, Endeavour river, on living leaves of a *Ficus*, *Bailey*, 1131.

The fungus forms large discoloured patches, often occupying the greater portion of a leaf. Perithecia slightly prominent when dry, level with the surface of the leaf when the latter is damp.

Pestalozzia vermiformis, *Massee* (*sp. nov.*). *Acervuli* epiphylli, gregarii, maculis pallidis subcircularibus insidentes. *Conidia* fusiformia, 4–5-septata ; loculi extremi hyalini, medius olivaceus, cellula summa setulas ternas divaricatas gerente, 25–32 × 5–6 μ.

Mount Cook, Endeavour river, on living leaves of an *Eugenia*, *Bailey*, 1132.

Distinguished from its allies by the conidia having four median olive-coloured cells. *P. Eugeniæ*, Thüm., differs also in having the acervuli arranged concentrically, and the pale patches on which they are seated bordered by a broad purplish zone of colour.

Tasmania.

Basidiomycetes.

Amanita grisea, *Massee et Rodway* (*sp. nov.*). *Pileus* carnosus, e convexo depressus, lævis, glaber, griseo-brunneus, 3-5 cm. latus, *Lamellæ* latæ, ventricosæ, subdistantes, ex albido pallidæ. *Sporæ* globosæ, glabræ, 9–10 μ diam. *Stipes* subæqualis, solidus, albidus, 4–5 cm. longus, 1 cm. crassus ; volva libera, persistens ; annulus membranaceus.

On the ground, *Rodway*, 145.

Distinguished by the free, persistent volva. Approaching the genus *Amanitopsis* in the somewhat rudimentary ring, which is nevertheless obvious.

Marasmius rugulosus, *Berk. et Curt. in Journ. Linn. Soc.* (*Bot.*), x. (1869), p. 294.
On dead sticks, leaves, &c., *Rodway*, 93.

Marasmius proximus, *Berk. et Broome in Journ. Linn. Soc.* (*Bot.*), xiv. (1875), p. 37.
On dead *Eucalyptus* bark, *Rodway*, 130.

Hydnum udum, *Fries, Syst. Myc.* i. (1821), p. 422.
On dead wood, *Rodway*, 627.

Hydnum pexatum, *Massee* (*sp. nov.*). *Subiculus* resupinatus, late et irregulariter effusus, submembranaceus, ochraceus. *Aculei* conferti, breves, acutiusculi, apice subincisi, nonnulli lævissime umbilicati. *Sporæ* ellipsoideæ, hyalinæ, 7 × 5 μ.
On dead wood, *Rodway*, 340.
The fungus assumed a dull blood-red colour when moistened with potassium hydrate.

Hydnum mucidum, *Pers., Syn.* (1808), p. 561.
On dead wood, *Rodway*, 287.

Hydnum isidioides, *Berk. in Hook. Lond. Journ. Bot.*, iv. (1845), p. 58.
On rotten wood.
Tasmania. *Rodway*. 161.
The specimen agrees with Berkeley's type of the above-named fungus; nevertheless its proper position would appear to be in the genus *Irpex*.

Irpex depauperatus, *Massee* (*sp. nov.*). *Subiculus* resupinatus, tenuis, cervinus, ambitu tomentosus, albidus. *Aculei* subconferti, obsolete reticulato-convexi, breves, lateribus subincisi. *Sporæ* ellipsoidæ, hyalinæ, 6 × 3–4 μ.
On dead bark, *Rodway*, 496.
Patches at first small and often more or less orbicular, finally confluent and forming irregular expansions 3–5 cm. across.

Læstadia insidiosa, *Massee* (*sp. nov.*). *Perithecia* epiphylla, semi-immersa, discoidea, atra, plus minus dense aggregata, astoma, 300–350 μ diam. *Asci* clavati sæpe curvati, apice obtusati, octospori, 150 × 20 μ. *Sporæ* distichæ, oblongo-ellipticæ, hyalinæ, continuæ (an semper?), 21–25 × 6–7 μ. *Paraphyses* nullæ, *Rodway*, 547.
Superficially resembling *Læstadia destructiva*, Sacc., a species parasitic on leaves of lucerne (*Medicago sativa*, Linn.); differing in the much larger asci and spores.

Odontia scopinella, *Berk. in Hook. f. N. Zeal. Fl.* (1864), p. 181.
On rotten wood, *Rodway*, 237.

Grandinia australis, *Berk. in Hook. f. Fl. Tasm.* (1860), p. 257.
On decayed wood, *Rodway*, 341.

Hypochnus chlorinus, *Massee* (*sp. nov.*). *Subiculum* latissime effusum, membranaceum, subsecedens, subtus et ambitu fibrillosum. *Hymenium* chlorinum, densissime granulosum. *Basidia* clavata, apice truncata, 11–13 × 5 μ, 4-sterigmata. *Sporæ* globosæ, hyalinæ, 4 μ diam.

On wood and bark, *Rodway*, 449.

Forming broadly effused yellowish-green granulose or pulverulent patches, much resembling the soredial condition of some *Lecidea*.

Lycoperdon tasmanicum, *Massee* (*sp. nov.*). *Peridium* obovatum, membranaceum, sordide ochraceum, verrucis pyramidatis demum deciduis ornatum, basi fibrillis longis repentibus radicante ; basis sterilis distincta. *Gleba* dilute brunnea ; capillitii hyphæ subhyalinæ, ramosæ. *Sporæ* globosæ olivaceo-brunneæ, verruculosæ, 4 μ diam.

On the ground, *Rodway*, 566.

Varying from 3-6 cm. high, superficially resembling *Lycoperdon piriforme*, Fries, but distinguished by the minutely warted spores, and the almost colourless capillitium as seen when the spores have been blown away.

Secotium Rodwayi, *Massee* (*sp. nov.*). *Peridium*, 2–3 cm. latum, globoso-depressum, tomentosum, ochraceo-albidum, inferne profunde excavatum. *Sporæ* globosæ, verruculosæ, subhyalinæ, plerumque stipitatæ, 7–8 μ diam. *Stipes* brevissimus, primitus infra furfuraceus, cavus.

Subterranean, *Rodway*, 571 with fig.

Underground, and only exposed when washed out or dug up by small marsupials.

Hymenogaster albidus, *Massee et Rodway* (*sp. nov.*). *Peridium* globoso-difforme, 1–2 cm. diam., floccosum, sordide albidum, demum lutescens. *Gleba* brunnea, firma, cellulis tortuosis majusculis e basi ipsa sterili vix conspicuis. *Sporæ* ellipsoideæ, utrinque obtusæ, longitudinaliter carinatæ, flavo-brunneæ, 21–28 × 14–18 μ, in quoque basidio binæ.

Occurring underground, *Rodway*, 643.

Allied to *Hymenogaster Rodwayi*, Massee ; differing in the larger cavities of the gleba and obsolete sterile base.

Hysterangium affine, *Massee et Rodway in Kew Bull.* (1898), p. 127, var. **irregulare**, *Massee* (*var. nov.*). Differt præcipue peridio vix regulariter subgloboso tenuiore, gleba fuscescente, sporis minoribus.

Underground, *Rodway*, 657.

Ascomycetes.

Peziza plicata, *Massee et Rodway* (*sp. nov.*). *Apothecia* sessilia subtus attenuata, primum concava, dein explanata, margine plicata vel nonnulla crenulata, extus albida, granulosa ; discus læte brunneus. *Asci* cylindraceo-clavati, octospori, 150 × 10 μ, iodo haud tincti. *Sporæ* hyalinæ, ellipticæ, glabræ, 1-seriatæ, 10 × 5 μ. *Paraphyses* graciles, sat numerosæ, apice leviter incrassatæ, brunneæ.

On partly buried branches, *Rodway*, 663.

Gregarious to densely caespitose. Allied to *Peziza sepiatra*, Cooke, differing in the smaller spores and plicate margin of the ascophore.

Helotium prasinum, *Massee* (*sp. nov.*). *Ascomata* sparsa aut laxe gregaria, ·5–1 mm. lata, extus stipiteque brevi furfuraceo mox glabra, pallida, margine integerrima; discus chlorinus, concavus, dein convexo-planus. *Asci* cylindraceo-clavati, apice iodo haud tincti, octospori, 80 × 6 μ. *Sporæ* monostichæ, oblongæ, rectæ, hyalinæ, 6–7 × 2–2·5 μ. *Paraphyses* biformes, hæ filiformes hyalinæ, illæ clavatæ superne chlorinæ.

On dead wood, *Rodway*, 565.

The stem is sometimes tinged reddish brown. Allied to *Helotium rhizogenum*, Ellis & Everh.

Phæopezia ochracea, *Massee et Rodway* (*sp. nov.*). *Ascomata* cupulata, substipitata, marginibus undulatis, extus albidi, glabra, ·5–1 cm. lata; discus pallide ochraceus. *Asci* cylindracei, octospori, 200 × 10 μ. *Sporæ* oblique 1-seriatæ, ellipticæ, utrinque subacutæ, glabræ, brunneo tinctæ, 15–18 × 6–7 μ. *Paraphyses* filiformes, subclavatæ.

On the ground, gregarious or caespitose; Cascades, *Rodway*, 125, 650, 650*a*.

Distinguished from all known species by the pale coloured ascophore and fusiform spores.

Cerion, *Massee* (*gen. nov.*). *Ascophora* erumpentia, cerata, marginata, sessilia, hymenio plano læte colorato. *Asci* cylindrici, octospori. *Sporæ* filiformes, hyalinæ, multiseptatæ. *Paraphyses* filiformes.

Growing on dead wood, *Rodway*.

Allied to the genus *Schizoxylon*, distinguished by the prominent free entire margin and the brightly coloured disc. The spores break up into segments through the septa when mature. Entire substance of the fungus waxy.

Cerion coccineum, *Massee et Rodway* (*sp. nov.*). *Ascophora* immersa, margine suberecto, nigricantia, 1 mm. lata, hymenio obscure coccineo. *Asci* cylindracei, 150–160 × 7–8 μ, octospori. *Sporæ* clavato-filiformes, 130–140 × 2 μ, multiseptatæ. *Paraphyses* filiformes, subclavatæ, apice roseo tinctæ.

On dead wood, *Rodway*, 654.

Scattered or crowded. Spores for a long time continuous, then multiseptate, finally breaking up at the septa into cells about 8-10 μ long.

Propolis faginea, *Karsten*, *Myc. Fenn.* i. (1871), p. 244.
On dead branches, *Rodway*, 625.

Karschia Atherospermæ, *Massee et Rodway* (*sp. nov.*). *Ascophora* erumpentia, carnosa, convexo-plana, atra, glaberrmia, ·5 mm. lata. *Asci* clavati, octospori, iodo haud tincti, 50–60 × 12–14 μ.

Sporæ biseriatæ, elliptico-oblongæ, 1-septatæ, loculo supero majusculo, fuligineæ, 18–20 × 7–8 μ. *Paraphyses* clavatæ, apice brunneo tinctæ.

On dead twigs and leaves of *Atherosperma moschatum*, Labill., Hobart, *Rodway*, 628.

Allied to *K. buellioides*, Sacc.

Asterina Systema-solare, *Massee* (*sp. nov.*). *Perithecia* gregaria, mycelio maculiformi atro insidentia, sphæroideo-depressa, glabra, 90–100 μ lata. *Asci* cylindraceo-clavati, breviter pedicellati, octospori, 50–55 × 12 μ. *Sporæ* distichæ, obovatæ, uniseptatæ, fuscidulæ, loculo superiore majore, obtusatæ, 9–10 × 5 μ.

On the upper surface of leaves of *Banksia marginata*, Cav., *Rodway*, 540.

Patches of mycelium irregularly scattered, 1–2 mm. across. *Parodiella Banksiæ* is present on the under surface of the same leaves (Kew Bull. 1899, 181), and bears a superficial resemblance to the present species, but differs in having globose perithecia, which are densely crowded in irregular patches ·5–1 cm. diameter.

Ustilagineæ.

Ustilago microspora, *Massee et Rodway* (*sp. nov.*). *Sori* paniculas totas implectentes, easque in massam pulveraceam transformantes, obscure fulvi. *Sporæ* globosæ, 3–3·5 μ diam., vel subglobosæ, 3–4 × 2–2·5 μ diam., glabræ, dilute olivaceæ.

Attacking the inflorescence of *Danthonia penicillata*, F. Muell, *Rodway*.

The entire inflorescence of the host is destroyed. The species is remarkable for the minute smooth spores.

Phycomycetes.

Pilobolus pullus, *Massee* (*sp. nov.*). *Sporangia* hemispherico-depressa, atra, glabra, 250–300 μ lata; columella convexa, sæpe medio constricta. *Sporæ* ellipticæ, episporio aurantiaco, 10–12 × 8–9 μ. *Stipes* albidus, apice ventricosa-inflatus, 1 mm. altus.

On cow dung, *Rodway*, 551.

Allied to *Pilobolus Kleinii*, Van Tiegh., from which it differs in the spherico-depressed smooth sporangium, and convex columella.

Melanconieæ.

Melanconium Eucalypti, *Massee et Rodway* (*sp. nov.*). *Acervuli* densissime gregarii, erumpentes epidermideque alba laciniata cincti, 350–400 μ diam. *Conidia* oblonga, apice subacuta, fuliginea, 25 × 31 × 10–13 μ.

On fruit of *Eucalyptus globulus*, Labill., *Rodway*, 666.

It forms large white patches on the fruit. When the conidia are mature and ready for dispersion the epidermis is ruptured in a stellate manner, and through the cavity formed the conidia ooze out in a tendril.

New Caledonia.

Melanconieæ.

Diplodia Ochrosiæ, *Massee* (*sp. nov.*). *Perithecia* in corticem immersa, 2–3 aggregata, globosa, ostiolo minuto papillulato, coriaceo-membranacea, atra, 300 μ diam. *Sporulæ* ellipticæ vel ovoideæ, utrinque obtusatæ, glabræ, 1-septatæ, nec constrictæ, subopacæ e fusco violaceæ, sterigmatibus brevissimis hyalinis suffultæ, 25–30 × 12–16 μ.

On fruit of *Ochrosia elliptica*, Labill, *Herb. Webb.*

Distinguished among its allies by the minutely papillate perithecium and the large violet spores.

West Tropical Africa.

Basidiomycetes.

Collybia olivacea, *Massee* (*sp. nov.*). *Pileus* tenuis, e convexo applanatus, lævis, glaber, siccus obscure olivaceus, marginem versus pallidior, 4 cm. latus. *Lamellæ* confertæ, angustæ, postice annexæ, albidæ, acie integræ. *Sporæ* ellipsoideæ, læves, 8–5 μ. *Stipes* cylindricus, cartilagineus, glaber, albo-virens, 8 cm. longus, 6–7 mm. crassus.

Old Calabar. Growing on a lawn, *Holland*, 22.

A very fine and well marked species, most nearly allied to *C. bibulosa*, Massee.

Lepiota Johnsonii, *Massee* (*sp. nov.*). *Pileus* subcarnosus, e convexo expansus, flocculoso-squamulosus, lateritius, squamulis obscurioribus, 3 cm. latus. *Lamellæ* liberæ, confertæ, subventricosæ, albæ. *Sporæ* ellipsoideæ, hyalinæ, glabræ, 8 × 5 μ. *Stipes* fistulosus, æqualis, subflexuosus, 5 cm. longus, 2 mm. crassus, pileo concolor ; annulus inferus, fugax, albidus.

Gold Coast. Aburi. Growing on damp soil in the bush, *Johnson*, 4.

Allied to *L. mastidalis*, Cooke & Massee ; differing in the larger size of every part, and in the broadly elliptical spores.

Mycena sphærospora, *Massee* (*sp. nov.*). *Pileus* campanulatus, siccus, lævis, olivaceus, 4–6 mm. latus. *Lamellæ* annexæ, angustæ, subdistantes, albido-olivaceæ. *Sporæ* hyalinæ, globosæ, verruculosæ. 4 μ diam. *Stipes* filiformis, basi incurvatus, pileo concolor, 2–3 cm. longus.

Old Calabar. On the ground under dense bush, *Holland*, 12.

A minute species distinguished at once amongst known species by the perfectly spherical minutely warted spores.

Pleurotus macilentus, *Massee* (*sp. nov.*). *Pileus* flaccidus, tenuissimus, flabelliformis, margine interdum lobatus, albo-flavidus,

glaber, striatus, 4–5 cm. latus. *Lamellæ* latæ, subconfertæ, albidæ, postice abrupte attenuatæ. *Sporæ* ellipticæ, 9–10 × 6 μ. *Stipes* lateralis, brevis, 5–8 mm. longus crassusque.

OLD CALABAR. On dead wood, *Holland*, 6.

Exceedingly thin and delicate in texture, pileus translucent, dry. Allied to *P. virginalis*, Berk.

Marasmius spaniophyllus, *Berk. in Hook. Lond. Journ. Bot.* ii., (1843), p. 631.

GOLD COAST. On a dead branch, Akim Forest, near Aburi, *Johnson*, 35.

Xerotus papyraceus. *Berk. in Hook. f., Flor. Tasm.* (1860), p. 250.
OLD CALABAR. On rotten wood, *Holland*, 17.

Flammula sapinea, *Karsten, Skand. Hatts.* I. (1879), p. 410.

GOLD COAST. On decayed wood, Botanic Gardens, Aburi, *Johnson*, 4.

Psilocybe citrina, *Massee* (*sp. nov.*). *Pileus* primo subglobosus, margine stipite contiguo subinvolutus, dein campanulato-expansus, submembranaceus, lævis, glaber, læte citrinus, 3 cm. latus. *Lamellæ* confertæ, attenuato-annexæ, latæ, purpureo-brunneæ. *Sporæ* oblique ovoideæ, glabræ, purpureo-brunneæ, 7 × 4 μ. *Stipes* teres, lævis, glaber, pileo concolor, 4 cm. longus, 3 mm. crassus.

GOLD COAST. On the ground, Botanic Gardens, Aburi, *Johnson*, 3, with fig.

A fine and well marked species, characterised by the clear citron yellow colour of the pileus and stem.

Panus conchatus, *Fries, Epicr.* (1836), p. 398.

GOLD COAST. On dead wood, Botanic Gardens, Aburi, *Johnson*, 14.

Panus torulosus, *Fries, Epicr.* (1836), p. 397.

GOLD COAST. On the ground, attached to buried wood, Botanic Gardens, Aburi, *Johnson*, 21.

Trogia hispida, *Massee* (*sp. nov.*). *Pileus* orbicularis, conchiformis, resupinatus, membranaceus, dorsi centro affixus, brunneus, hispidus, 2–3 mm. latus. *Lamellæ* centro radiantes, confertæ, angustissimæ, acie incrassatæ. *Sporæ* ellipsoidæ, subhyalinæ, 5 × 3 μ.

GOLD COAST. On dead twigs, Akim Forest, near Aburi, *Johnson*, 50.

Allied to *T. Alni*, Peck; differing in the hispid pileus and very narrow crowded gills.

Lenzites applanata, *Fries, Epicr.* (1836), p. 404.

GOLD COAST. On dead wood, Akim Forest, near Aburi, *Johnson*, 49.

Lentinus flavidus, *Massee* (*sp. nov.*). *Pileus* cyathoideus, membranaceo-coriaceus, 5–8 cm. diam., albido-flavescens, glaber, margine incurvus, striatulus. *Lamellæ* angustæ, confertæ, attenuato-decurrentes, acie integræ. *Sporæ* ellipticæ, 10 × 4 μ. *Stipes* rectus, densissime velutino-hispidulus, brunneus, 2 cm. longus, 1 cm. crassus, e sclerotio subgloboso 4–5 cm. diam., extus glabro castaneo-fusco intus albido enascens.

OLD CALABAR. Among decaying vegetable matter, *Holland*, 5.

Separated from all known species by the yellowish-white pileus, dark hispid stem and chestnut-coloured sclerotium.

Lentinus blepharodes, *Berk. et Curt.* in *Journ. Linn. Soc.* (*Bot.*) x. (1869), p. 301.

GOLD COAST. On dead wood, Akim Forest, near Aburi, *Johnson*, 15.

Lycoperdon excipuliforme, *Vitt.*, *Monog*, *Lycop.* (1842), p. 193.
OLD CALABAR. On naked ground, *Holland*, 11.

Polyporus Hollandii, *Massee* (*sp. nov.*). *Pileus* ungulato-dimidiatus, postice latissime adnatus, plus minusve decurrens, effusus, 5–6 cm. latus, 10–12 cm. longus, superne lævis, azonus, glaberrimus, læte citrinus. *Hymenium* e tubulis albis brevissimis, ore minuto rotundo dense stipatis compositum. *Caro* crassa, compacto-elastica, alba.

OLD CALABAR. On a trunk, *Holland*, 21.

Allied to *P. betulinus*, Fries; differing in the bright lemon-yellow pileus, and more broadly effused and decurrent attachment to the matrix.

Polyporus lucidus, *Fries*, *Syst. Myc.* i. (1821), p. 353.

GOLD COAST. On dead wood, Akim Forest, near Aburi, *Johnson*, 19, 22.

Polyporus arcularius, *Fries*, *Syst. Myc.* i. (1821), p. 342.
OLD CALABAR. On dead wood, *Holland*, 14.

Fomes lucidus, *Fries*, *Nov. Symb. Myc.* i. (1851), p. 61.
OLD CALABAR. On dead wood, *Holland*, 1.

Polystictus nigripes, *Massee* (*sp. nov.*). *Pileus* cyathoideo-infundibuliformis, carnoso-membranaceus, lentus, lævis, glaber, pallide ochraceus, margine membranaceo integro undulatus. *Tubuli* minuti, pileo pallidiores, ore rotundato-angulato, circa 200 μ diam. *Sporæ* ellipsoideæ, hyalinæ, 7 × 4 μ. *Stipes* erectus, æqualis, 1–5 cm. longus, 2–5 mm. crassus, cute crustacea atra.

GOLD COAST. On dead wood, Botanic Gardens, Aburi, *Johnson*, 23.

Allied to *P. xanthopus*, Fries.

Polystictus tabacinus, *Sacc.*, *Syll.* vi. (1888), p. 280.

GOLD COAST. On dead wood, Akim Forest, near Aburi, Kibbi, *Johnson*, 11.

Polystictus membranaceus, *Sacc., Syll.* vi. (1888), p. 287.

Gold Coast. On dead wood, Akim Forest, near Aburi, *Johnson*, 12.

Polystictus chrysites, *Sacc., Syll.* vi. (1888), p. 248.

Gold Coast. On dead wood, Akim Forest, near Aburi, *Johnson*, 45.

Polystictus rigidus, *Sacc., Syll.* vi. (1888), p. 271.

Gold Coast. On dead wood, Akim Forest, near Aburi, *Johnson*, 17, 44.

Polystictus occidentalis, *Cooke in Grevillea*, xiv. (1886), p. 85.
Gold Coast. On rotten wood, Aburi, *Johnson*, 10.

Polystictus xanthopus, *Fries in Nov. Act. Soc. Sci. Upsal.* i. (1851), p. 74.

Gold Coast and Old Calabar. On branches, Akim Forest, near Aburi, *Johnson*, 27. Old Calabar, *Holland*, 19.

Polystictus versicolor, *Fries, Syst. Myc.* i. (1821), p. 368.

Gold Coast. On dead branches, Akim Forest, near Aburi, *Johnson*, 43.

Polystictus sanguineus, *Fries in Nov. Act. Soc. Sci. Upsal.* i. (1851), p. 75.

Gold Coast. On dead trunks, Akim Forest, near Aburi, *Johnson*, 26.

Polystictus Persoonii, *Cooke in Grevillea*, xiv. (1886), p. 85.

Gold Coast. On dead wood, Akim Forest, near Aburi, *Johnson*, 29, 31.

Favolus tessulatus, *Mont., Syll. Crypt.* (1856), p. 556.
Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 39.

Laschia tremellosa, *Fries, Summa. Veg. Scand.* (1849), p. 325.
Old Calabar. On dead wood, *Holland*, 12.

Stereum hirsutum, *Fries, Epicr.* (1836), p. 549.
Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 34.

Lachnocladium cartilagineum, *Berk. & Curt. in Journ. Linn. Soc.* (*Bot.*) x. (1869), p. 330.

Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 38.

Cyphella lilacina, *Massee* (*sp. nov.*). *Pileus* subsessilis, campanulatus, erectus, tenuis, membranaceo-tenacellus, margine primo involutus, undulatus, 0·5–1 mm. diam. et alt., extus dense tomentoso-pubescens, pilis continuis 50–60 × 5–6 μ succineis, hymenio lævissimo lilacino-albescente. *Sporæ* ellipticæ, lilacinæ, 8 × 5–5·5 μ.

Gold Coast. On a dead herbaceous stem, Botanic Gardens, Aburi, *Johnson*, 57.

Densely gregarious; extremely pilose, the hairs often covered with a deposit of lime, giving to the surface a frosted aspect. Allied to *C. albo-violascens*, Weinm.

Pistillaria Johnsonii, *Massee* (*sp. nov.*). *Sporophora* tota candida; clavulæ simplices, erectæ, lævissimæ sursum albo-pruinosæ, in sicco longitudinaliter rugosæ, filiformes, superne clavulatæ, 2 mm. alt. *Sporæ* ellipsoideæ, hyalinæ, 2 × 1 μ.

Gold Coast. On a dead herbaceous stem, Botanic Gardens, Aburi, *Johnson*, 82.

Gregarious; allied to *P. puberula*, Berk.

Hirneola auriformis, *Fries, Fungi Natal.* (1848), p. 26.

Old Calabar. On living bark of Avocado pear, *Persea gratissima*, Gært., *Holland*, 3.

Tremella fuciformis, *Berk. in Hook Kew Journ. Bot.* viii. (1856), p. 277.

Gold Coast and Old Calabar. On rotten wood, Botanic Gardens, Aburi, *Johnson*, 7. Old Calabar, *Holland*, 13.

Xylaria Chamissonis, *Sacc., Syll.* i. (1882), p. 345.

Gold Coast. On dead wood, Akim Forest, near Aburi, *Johnson*, 24.

Xylaria scopiformis, *Mont. in Ann. Sci. Nat.* xiii. (1840), p. 349.

Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 48.

Xylaria rhopaloides, *Mont. in Ann. Sci. Nat.* iii. (1855), p. 99.

Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 33.

Xylaria tabacina, *Berk. in Hook. Journ. Bot.* vi. (1854), p. 225.

Gold Coast. On dead wood, Botanic Gardens, Aburi, and Akim Forest, *Johnson*, 18, 32.

Hypoxylon annulatum, *Mont. Syll. Crypt.* (1856), p. 213.

Gold Coast. On dead bark, Botanic Gardens, Aburi, *Johnson*, 81.

Haplosporella violacea, *Massee* (*sp. nov.*). *Perithecia* globosa, atra, in stromate atro pulvinato erumpente aggregata. *Sporulæ* ellipticæ vel rotundatæ, sordide violaceæ, glabræ, continuæ, 18–22 × 10–12 μ, in sterigmatibus conicis hyalinis acrogenæ.

Gold Coast. On dead bark, Botanic Gardens, Aburi, *Johnson*, 36, 52.

Stroma black, bursting through the bark, 2–3 mm. diam. Distinguished from allied species by the violet spores. Allied to *H. chlorostroma*, Speg.

Daldinia concentrica, *Cesati*, *Schema Sferic. Ital.* (1863), p. 197. GOLD COAST. On dead wood, Kofridua, *Johnson* 16.

Diatrype caminata, *Kalchbr. & Cooke in Grevillea*, ix. (1880), p. 28.

GOLD COAST. On a decorticated branch, Botanic Gardens, *Johnson*, 76.

Auerswaldia maxima, *Massee* (*sp. nov.*). *Stromata* disciformia, erumpentia, rotundata seu irregularia, atra, opaca, multilocularia 1–2 cm. lata. *Loculi* dense congesti, immersi. *Asci* cylindracei, octospori, 120 × 10 μ. *Sporæ* monostichæ, ellipsoideæ, continuæ, brunneæ, opacæ, 12 × 6–7 μ.

GOLD COAST. On dead branches, Botanic Gardens, Aburi, *Johnson*, 58.

Allied to *A. disciformis*, Winter; differing in the broadly effused stroma and smaller spores.

Nectria verrucosa, *Massee* (*sp. nov.*). *Perithecia* in pulvinulos hemisphæricos 2–3 mm. diam. conferta, globosa, incarnata, verrucosa, ostiolo papillato. *Asci* cylindracei, octospori, aparaphysati, 60 × 8 μ. *Sporæ* ellipticæ, utrinque rotundatæ, medio 1-septatæ vix constrictæ, loculis 1-guttulatis æqualibus hyalinæ, læves, 10 × 6 μ.

GOLD COAST. On dead bark, Botanic Gardens, Aburi, *Johnson*, 74.

A neat species characterised by the warted flesh-coloured perithecia. Allied to *N. rimicola*, Cooke.

Sphærostilbe cinnabarina, *Tul.*, *Sel. Fung. Carp.* iii. (1865), p. 103.

GOLD COAST. On dead bark, Botanic Gardens, Aburi, *Johnson*, 41, 66, 68, 69, 77, 78.

Hysterium vermiforme, *Massee* (*sp. nov.*). *Perithecia* superficialia, gregaria, atra, carbonacea, lineari-elongata seu vermiformia, utrinque acutiuscula, medio rima longitudinali percursa, 2–4 mm. longa, 0·5 mm. lata, transverse striatula. *Asci* cylindracei apice truncato-rotundati, octospori. *Sporæ* 1-seriatæ, cylindraceo-ellipsoideæ, utrinque obtusiusculæ, triseptato-constrictæ, brunneæ, 35–40 × 12–14 μ. *Paraphyses* filiformes.

GOLD COAST. On dead branches still covered with bark, Botanic Gardens, Aburi, *Johnson*, 69.

A very fine species, allied to *H. eumorphum*, Sacc.

Schizothyrium melanoplacum, *Sacc.*, *Syll.* ii. (1883), p. 726.

GOLD COAST. On living leaves of *Justicia flava*, Vahl, Aburi, *Johnson*, 54.

Bulgaria turbinata, *Massee* (*sp. nov.*). *Ascomata* turbinata, atra, extus granulata, glabra, 2–4 mm. lata; substantia subparenchymatica. *Asci* clavati, octospori, apice iodo haud tincti, 120 × 18–20 μ. *Sporæ* ellipticæ, utrinque obtusissimæ, glabræ, olivaceo-brunneæ, 17–20 × 10–12 μ. *Paraphyses* filiformes.

Gold Coast. On rotten wood, Botanic Gardens, Aburi, *Johnson*, 70, 78.

Densely crowded, and often irregularly angular from mutual pressure. At first broadly turbinate, the apex becoming plane as the disc gradually develops. Somewhat elastic when moist, contracting and irregularly wrinkled when dry. Readily distinguished from all known species by the very large spores and the small ascophore.

Trichoscypha Hindsii, *Cooke*, *Myrogr.* (1879), p. 252, pl. 51, fig. 200.

Gold Coast. On dead branches, Botanic Gardens, Aburi, *Johnson*, 47, 51.

Helminthosporium Coffeæ, *Massee* (*sp. nov.*). *Maculæ* nullæ. *Hyphæ* epiphyllæ, velutinæ, plagas effusas nigro-olivaceas efficientes; fertiles densissime aggregatæ, basi connatæ, erectæ, cylindraceæ, rectæ vel flexuosulæ, septatæ, sursum nodulosæ, olivaceo-brunneæ, 300–400 × 7–8 μ. *Conidia* obovata, 3–5-septata, nec constricta, pallida, 45–55 × 8–10 μ.

Gold Coast. On leaves of *Coffea liberica*, Hiern, Botanic Gardens, Aburi, *Johnson*, 8.

Allied to *H. paraguayense*, Speg.

Dendryphium effusum, *Massee* (*sp. nov.*). *Maculæ* amphigenæ, pannoso-effusæ, olivaceo-atræ. *Hyphæ* repentes intricato-ramosæ, sursum suberectæ, dilute olivaceæ, sparse septatæ, 7–8 μ crassæ. *Conidia* ex apicibus hypharum producta, elongato-clavata, episporio lævi, 11–19-septata, 150–200 × 9–12 μ, dilute olivacea.

Gold Coast. On dead branches, Botanic Gardens, Aburi, *Johnson*, 71.

Surrounding dead branches with a dense felt-like layer. Allied to *D. toruloides*, Sacc.

Stilbum albipes, *Massee* (*sp. nov.*). *Stromata* dense aggregata, erecta, recta, cylindracea, alba, superne in capitulo globoso-flavo expansa 0·5 mm. alta; hyphæ capituli graciles, irregulariter ramulosæ, 2–3 μ crassæ. *Conidia* elliptica, hyalina, utrinque obtusa, 2 × 1 μ.

Gold Coast. On bark, Botanic Gardens, Aburi, *Johnson*, 65, 67.

Allied to *S. connatum*, Kalchbr. and Cooke.

Isaria acervata, *Massee* (*sp. nov.*). *Stromata* dense aggregata, erecta, 1 mm. alta, grisea, supra ob apices hypharum undique divergentes tomentosa; ramulis subverticillato-ramulosis. *Conidia* in hypharum apicibus denticulatis acrogena, elliptica, hyalina, 3 × 2 μ.

Gold Coast. On dead wood, Botanic Gardens, Aburi, *Johnson*, 59, 64.

Allied to *I. coralloidea*, Kalchbr. & Cooke.

Fusarium heterosporum, *Nees in Nat. Act. Cur.* ix. (1818), p. 213, tab. v. fig. 5.

Gold Coast. On guinea grain, *Pennisetum typhoideum*, Rich., Krobo Plain, *Johnson*, 42.

A well known destructive parasite of cereals in Europe and America.

South Africa.

Ascomycetes.

Phyllachora Graminis, *Fuckel*, *Symb. Myc.* (1869), p. 216.

Natal. On fading leaves of *Melinis minutiflora*, Beauv., Umpumuto Hills, 2,000 ft., *Buchanan*, 299.

Uredineæ.

Uromyces Bolusii, *Massee* (*sp. nov.*). *Acervuli* epiphylli, innato-prominuli, compacti, brunneo-cinnamomei, sæpe ob confluentiam lineares, diu epidermide albicanti tecti. *Teleutosporæ* ellipticæ, episporio lævissimo sursum valde incrassato et in mucronem papillæformem producto, 29–35 × 24–26 μ, pallide brunneæ, stipite longissimo (125–160 × 7–8 μ), hyalino suffultæ.

Cape Colony. On living leaves of *Aspalathus pachyloba*, Benth., Montagu Bath, *Bolus*, 7597.

Allied to *U. junci*, Tul.; differing in the larger spores and much longer pedicel.

Puccinia pallida, *Massee* (*sp. nov.*). *Maculæ* amphigenæ determinatæ pallescentes. *Acervuli* hypophylli, centro macularum insidentes, 6--10-aggregati, erumpentes, intense fusco-ferruginei. *Teleutosporæ* anguste lanceolatæ, lævissimæ, apice incrassatæ, stramineæ, 50 × 15–16 μ. *Stipes* crassiusculus, basi subattenuatus hyalinus.

Natal. On leaves of a species of *Orthosiphon*, Van Reenen's Pass, Drakensberg, *Wood*, 5701.

The teleutospores are straw-colour and readily separate into two portions along the median septum as in *P. dissiliens*, Cooke, to which the present species is allied.

Argentina.

Hyphomycetes.

Heterosporium Calandriniæ, *Massee* (*sp. nov.*). *Acervuli* effusi, amphigeni, maculas pulvinatas irregulares pallido-olivascentes formantes. *Hyphæ* repentes, intricato-ramosæ, laxe remoteque septatæ, sursum suberectæ, simplices, dilute olivaceæ. *Conidia*

elongato-elliptica, utrinque rotundata apice sæpe papillata, episporio asperulata, 1–3-septata, dilute olivacea, 15-25 × 7–10 μ.

ANDES OF MENDOZA. On the inflorescence of *Calandrinia potentilloides*, C. Gay, Puente del Inca, 9170 ft., *Gosse*, 13.

Allied to *Heterosporium Atromia*, Harkness, differing more especially in the paler colour and finer granulation of the epispore.

V.—MISCELLANEOUS NOTES.

Retirement of Curator.—It will be a matter of genuine regret to all acquainted with Kew that Mr. George Nicholson, F.L.S., was compelled by impaired health to retire on July 31 from the post of Curator of the Royal Botanic Gardens. Mr. Nicholson entered the Curator's office on February 15, 1873, after a public competition. In 1886, on the retirement of the preceding Curator, the late Mr. John Smith, Mr. Nicholson was appointed by the Treasury to succeed him.

Mr. Nicholson's services to Kew are well known. To him in great measure is due the present efficient condition of the Arboretum. The *Hand list of Trees and Shrubs grown in Arboretum* was prepared by him, and is universally accepted as a standard authority for their nomenclature. Kew still hopes to retain the benefit of Mr. Nicholson's botanical experience now that he has been relieved from the pressure of administrative duties.

New Curator.—The First Commissioner has filled the vacancy created by Mr. Nicholson's retirement by the appointment of the Assistant Curator, Mr. William Watson. This officer entered the service of Kew in 1879 as Foreman. In 1886 he was raised to the position of Assistant Curator, in charge of the indoor cultivation; this, as Curator, he will still retain. Mr. W. J. Bean, the Assistant Curator in charge of the Arboretum, will now take the general charge of the grounds and of the ligneous collections.

Hon. David Carnegie.—This gentleman, to whom Kew is indebted for a small collection of dried plants, gathered on his exploring expedition across the unknown desert of North-west Australia in 1896, was appointed Assistant Resident of the Middle Niger in 1899. He there soon made a reputation as a leader and organiser, and gained the respect and devotion of the natives. Unfortunately this promising life was cut short in an encounter with a refractory tribe. He was leading a small party when he was struck by a poisoned arrow in the thigh, and died 15 minutes later, on November 27, 1900. His behaviour in this affair so inspired his followers with courage that they secured his body and fought their way back through a most difficult country. Mr. Carnegie was the youngest son of the Earl of Southesk, and was born in

London in 1871. It was his intention to devote such time as he could spare to the elucidation of the vegetable products of the Niger Protectorate. He wrote an excellent account of his explorations in Australia under the title of *Spinifex and Sand*; and his name is commemorated in botany by *Dicrastylis Carnegiei*, Hemsl., *Hooker's Icones Plantarum*, plate 2582. This plant, which "has a perfume resembling lavender," was found on the steep sides of sand-ridges over an area covered by two or three days' travel.

Dr. Peter Cormack Sutherland.—The death, from pneumonia, of this old correspondent of Kew is announced by the *Natal Mercury* as having taken place at his residence in Durban, Natal, on November 30th, 1900. The Colony has lost in him one of its ablest scientific men.

Dr. Sutherland was born at Latheron, in Caithness, Scotland, in 1822. His parents were poor, and they emigrated to Nova Scotia when he was eight years of age. After a few years they returned to their native village in Scotland, where the lad Peter was educated until twenty years of age, when he entered King's College, Aberdeen, and graduated there in medicine in his twenty-fifth year. It was whilst still a student that he embarked on his first scientific mission: this was to the West Coast of Africa, to report upon guano, at that time coming into use as a manure. Afterwards, between 1845 and 1847, he made two voyages to the Arctic regions, and then settled down to practice as a medical man in Tyrie, New Pitsligo, and Aberdeen until 1850, when he joined Captain Penny's expedition in search of Sir John Franklin. During this voyage he made a collection of Algæ and Lichens, which he sent to Sir William Hooker in 1851, and thus commenced his correspondence with Kew. In 1852 he again went to the Arctic regions, under Captain Inglefield, on a fresh expedition in search for Sir John Franklin. This voyage resulted in his sending to Kew some seeds and living plants from N. lat. 69°, and collections of dried plants from higher latitudes; besides which he also made geological and zoological collections. At this period he had a desire to enter Government service, but as his age prohibited this, on the recommendation of influential friends, he went to Natal, where he arrived in the autumn of 1853. Here his ability and merits were soon recognised, for after a few months' residence he was appointed Government Geologist to the Colony of Natal. In 1855 he was promoted to the post of Surveyor-General, which he held until 1887, when he retired upon a well-earned pension. During his career in Natal he held a number of responsible public positions, and was elected at Maritzburg as a member of the Legislative Council. The Right. Hon. C. J. Rhodes was placed by his father, in 1871, in the charge of Dr. Sutherland, with whom he resided several months.

Dr. Sutherland's chief study was geology, but botany also received a share of his attention, and he was one of the founders of the Natal Botanic Society. For many years he corresponded with Kew, and contributed a very large number of dried and living plants from Natal, Pondoland, and the Transvaal. Among

plants his name will be perpetuated in *Greyia Sutherlandii*, whilst geographically Mount Sutherland, a peak of the Drakensberg Range, will keep his memory green in the minds of Colonists.

Captain M. S. Wellby.—Among the victims of the South African war is this comparatively young and intrepid officer and explorer. Though best known as a geographer, he paid attention to Natural History, and Kew is indebted to him for some small but interesting botanical collections. Born in 1866, and educated at Rugby and Sandhurst, he received his commission as Lieutenant in the 18th Hussars in 1886, becoming Captain in 1894, and Adjutant of his regiment in 1897. His first expedition was to Somaliland, in 1894, but his most arduous and most important journey was across Tibet, from west to east, mainly between lat. 35° and 36°, which was accomplished in company with Lieutenant (now Captain) Malcolm in 1896. In spite of all difficulties, a very carefully labelled collection of dried plants was made and presented to Kew. A preliminary list, furnished by Kew, was published in Wellby's *Through Unknown Tibet*, and a more complete elaboration of the collection will appear in Mr. W. B. Hemsley's shortly forthcoming paper on the flora of Tibet, in the *Journal of the Linnean Society*. In 1897 Captain Wellby served with distinction in some military operations on the north-west frontier of India. In 1898–9 he made an expedition through Abyssinia to Lake Rudolf, and formed a collection of dried plants, which he presented to Kew. This collection has not yet been worked out. Shortly after his return from Abyssinia he was ordered to join his regiment in South Africa. He passed through the whole siege of Ladysmith, and was subsequently attached to General Sir Redvers Buller's force in the Transvaal. On July 30th, 1900, he was wounded in an engagement at Mertzicht, and died at Paardekop on August 5th. Most of the foregoing particulars were extracted from the *Geographical Journal*. It is gratifying to be able to add that Captain Malcolm, though grievously wounded at Paardeberg, is at length convalescent.

Botanical Magazine for June.—*Crinum rhodanthum* is a recently-described species from Ngami Land, British Central Africa, where it was discovered by Captain and Mrs. Lugard, from whom Kew received a bulb and herbarium specimens. Its flowers are pale red, and are borne in lax umbels nearly two feet in diameter. *Beschorneria Wrightii*, supposed to be a native of Mexico, is a new species most nearly allied to *B. dekosteriana*. The Kew plant has a stem 18 inches high; its leaves are about five feet long, and it bore a panicle eight feet high of green-yellow flowers. It is growing in the Mexican House at Kew, and flowered in June, 1900. *Calanthe madagascariensis* is closely allied to *C. veratrifolia*, figured at plate 2615, but differs in size, in the undulate leaves, and in the much broader sepals and petals. The flowers usually have white sepals and petals, clouded with pink,

and a rose-purple lip; sometimes, however, the sepals and petals are pure white and the lip yellow. A specimen of this species was presented to Kew by Mr. Warpur, a Belgian collector. *Nymphæa flavo-virens* resembles the Mexican *N. gracilis*, and is probably a native of the same country. Its flowers are white with golden-yellow stamens. The Kew plant was obtained from Mr. W. N. Pike, of the Floral Park, New York.

Botanical Magazine for July.—*Rhododendron ciliicalyx* is one of the numerous plants discovered in China by the late Abbé Delavay, who sent seeds to the Jardin des Plantes, Paris, whence a plant was received at Kew in 1892. It has large flowers, white, or white suffused with rose, and resembles very closely the Indian *R. formosum*, differing in its robustness, larger flowers, and in having long cilia on the lobes of the calyx. *Chelonopsis moschata* is a handsome Labiate from Japan and China. The genus consists of only two species, and is allied to the North American *Physostegia*, and *Melittis*. The specimen drawn was raised from seeds sent to Kew by A. K. Bulley, Esq., of West Kirby. *Iris chrysantha* is a new species belonging to the section *Pogoniris*, and is characterised by having narrow leaves, a long peduncle with a single cluster of large pale yellow flowers, large spathe-valves, and a short perianth-tube. A specimen was sent to Kew by Mr. R. I. Lynch, of the Cambridge Botanic Garden. Its native country is not definitely known, but it is probably Persia. The Abyssinian *Cyanotis hirsuta* has edible tuberous roots, called Burko by the natives. Some tubers were presented to Kew by A. B. Wylde, Esq., the Abyssinian traveller. *Impatiens chrysantha* is a new species from the Western Himalaya and is closely allied to *I. Edgeworthii*. The Kew plants were raised from seeds received from J. F. Duthie, Esq., Director of the Botanical Department of Northern India.

Botanical Magazine for August.—*Bulbophyllum grandiflorum* was discovered in New Guinea nearly three-quarters of a century ago, but it is of comparatively recent introduction into cultivation, a plant having flowered for the first time in Sir Trevor Lawrence's collection in 1895. Allied to *B. Cominsii*, from the Solomon Islands, it differs in having a much larger flower, the curious colour of which recalls that of the pitchers of some Sarracenias; its sepals are very large, contrasting remarkably with the minute petals. The Kew plant was purchased from Messrs. Sander & Co. in 1898. *Pæonia lutea* is a native of the mountains of Yunnan, where it was discovered by the late Abbé Delavay. Its most noteworthy characters are a woody stem, in which it resembles the Chinese *P. Moutan*, and yellow flowers. The plant drawn was received from the Jardin des Plantes, Paris, and flowered in the Temperate House in June, 1900. *Helichrysum Gulielmi* grows on Mount Kili-manjaro, in German East Africa, at elevations of 5,000 to upwards of 9,000 feet. It is a handsome plant, having white woolly stems and leaves, and flower-heads with white

bracts, sometimes rose-red on the outer surface. The specimen from which the drawing was made was received from W. E. Gumbleton, Esq., of Belgrove, co. Cork. *Strobilanthes gossypinus*, from the Nilghiri Hills, was raised from seed sent by the late Mr. Jamieson, of Ootacamund, in 1887, and flowered in the Mexican division of the Temperate House in 1900. The fine *Gladiolus sulphureus* is a native of the Transvaal, and was obtained by Kew from Mr. Max Leichtlin, of Baden.

Flora capensis.—The first part of the fifth volume of this work, edited by the Director, has been published. It contains the elaboration of the *Acanthaceæ* by Mr. C. B. Clarke, F.R.S., that of the *Myoporineæ* and *Selagineæ* by Mr. R. A. Rolfe, A.L.S., and of the *Verbenaceæ* by Mr. H. H. W. Pearson, F.L.S.

Flora of Tropical Africa.—Parts I. & II. of the eighth volume of this work have been published. They contain the monocotyledonous orders from *Pontederiaceæ* to the first instalment of *Cyperaceæ*.

Flora of the Presidency of Bombay.—The first part of this work, extending to the end of *Rutaceæ*, has been published. It has been prepared at Kew, under the authority of the Secretary of State for India in Council, by Dr. Theodore Cooke, C.I.E., F.L.S., formerly Principal of the College of Science at Poona and Director of the Botanical Survey of Western India.

Caá-êhê or azucá-caá.—Early in the present year Mr. Cecil Gosling, H.B.M. Consul at Asuncion, Paraguay, sent to Kew a fragmentary specimen of a composite plant with the following information :—

I beg to enclose herewith some leaves of a plant which has lately been discovered in Paraguay by Dr. Bertoni, an Italian botanist, and Director of the Agricultural College here. This plant, which has probably been known to the Indians since a hundred years or more and whose secret has as usual been so faithfully guarded by them, grows in the Highlands of Amambai and near the source of the River Monday, not being, it is said, found further south than this. It is a modest shrub growing side by side with the weeds and luxuriant grasses of that district and only attains a height of a few inches. The leaves are small and the flowers still more diminutive, and the Indians call it *Caá-êhê*, meaning sweet herb, because of its sweetness, a few leaves being sufficient to sweeten a strong cup of tea or coffee, giving also a pleasant aromatic flavour. Its discoverer does not, however, believe that the *Caá-êhê* bears any relation to the saccharine properties of

sugar, and he has named it after Professor Ovidio Rebaudi, of Asuncion, *Eupatorium rebaudianum*, the botanical description being as follows :—

"Capitula corymbulosa parvula, 1–4-flora, corymbulis laxe paniculatis. Involucrum cylindraceo-oblongum, bracteis biseriatis subæqualibus. Receptaculum planum. Corollæ anguste paniculatæ tubo breviter quinquilobo. Styli rami superne parum incrassati. Pappi setæ breviter barbellatæ. Achænia glabra.

Herba annua erecta, caule gracile piloso simplice vel parum ramoso, long. 0,20–0,40 m. Folia opposita inconspicua pilosula scabra subdentata oblonga, apice obtusa, basi cuneiformia vel attenuata, petiolo brevi. Corymbulorum pedunculi et pedicelli gracillimi, bracteis bracteolisque elongato-linearibus. Flores subalbidi parvi. Habitat in pratis siccis q. lomas altas apellantur, atque, etsi rare, in cultis relictis silvæ virginis regionis Amambai usque ad fluminem Monday.

Planta succo dulcissimo farcta, ut videtur rara. Vulgo *caá-êhê* vel *azucá-caá*, idest herba dulcis vel herba saccharata."

In an article describing the plant Dr. Bertoni remarks, I think with great justice, to what extent we are indebted to those close observers of nature, the Indians, from whom we have learnt the use of tobacco, cocoa, maize, mani, manioc, potatos, cotton, quinine, vanilla, rubber, and sarsaparilla. Truly a long list of benefits to mankind ! I am told also that Dr. Bertoni has lately discovered a tree whose sap is alcoholic and similar in taste and colour to a rough red wine, being used as such by the Indians.

Subsequently Mr. Gosling sent a copy of the *Revista de Agronomiá*, ii., pp. 35–37 (1899), where the description reproduced above was published. There is no doubt that the plant possesses very strongly the power of stimulating the sensation of sweetness, for the smallest piece of a leaf causes a persistent sweetness in the mouth. We have not succeeded in identifying the fragments sent with any plant in the Kew Herbarium ; but from the floral structure it belongs to *Stevia* rather than *Eupatorium*, and its affinity is with *S. collina*, Gard.

Castilloa markhamiana.—As pointed out in *Hooker's Icones Plantarum*, in the text relating to *Castilloa Tunu*, Hemsl. (plate 2651), this name has been applied to two very different plants ; and, as the confusion is continued in the most recent writings on caoutchouc, it may be useful to repeat the explanation here. *Castilloa markhamiana*, Collins (*Report on Caoutchouc*, p. 12. t. 3), as suggested by Bentham and Hooker (*Genera Plantarum*, iii., p. 372), is a species of *Perebea*, very closely allied to the original *P. guianensis*, Aubl., and should bear the name *P. markhamiana*. *Castilloa markhamiana* of Markham's *Peruvian Bark*, p. 453, and of cultivators, is not distinguishable from *C. elastica*, Cerv., to which also, judging from the description and all the specimens of *Castilloa* received from Costa Rica, *C. costaricana*, Liebm., belongs.—W. B. H.

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

Nos. 178—180.] OCTOBER—DECEMBER. [1901.

I.—GROUND-NUT, OR PEA-NUT.

(*Arachis hypogæa* Linn.)

Arachis hypogæa is a plant unknown in the wild state. There is no knowledge to be recorded of its early history. How it came into cultivation cannot now be traced. That America gave the race birth is beyond doubt, and it is clear that in the sixteenth century Africa and Asia received it. Since then it has spread, so that the area of its extension is now over the whole of the tropics, and into a large part of the temperate regions suited to the vine. Wherever grown its richly oily seeds serve as a food, and during the last 60 years it has obtained a wide use in Europe as an oil-seed.

Many small controversies have arisen over *Arachis*, and many misunderstandings of the plant. The origin of the plant, the sexes of its flowers, the nodules of the root, have been among the causes. The calyx-tube has been a fruitful source of mistake, and the origin of the name *Arachis* is hopelessly obscure.

Description.

The genus *Arachis* is a peculiar one of the large order *Leguminosæ*, in which it belongs to the sub-order *Papilionaceæ*. All the known wild species of *Arachis* inhabit Tropical South America, and doubtless the largest member of the genus, *A. hypogæa*, was worked up by the cultivation of centuries in the home of the race. It is a clover-like plant; indeed, a field of it forcibly suggests a luxuriant crop of clover. The stems may attain a height of 1 to 2 feet, or at times of 3 feet, but for the most part lie more or less prostrate on the soil. It is the custom in the United States to plant the rows $2\frac{1}{2}$ to 3 feet apart, when the branches ultimately meeting have a length of nearly 2 feet.

The leaf of *Arachis* has four leaflets placed in pairs, each attached by a motile organ (pulvinulus) to the common leaf-stalk; like clover leaflets they exhibit sleep movements, each pair folding together at nightfall and remaining thus until dawn.

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The flowers, which are pea-like and bright orange-yellow, are produced one at a time from large buds at the bases of the leaves. Their duration is but short, for they wither for the most part on the day of their production.

Outside the orange-yellow petals is the yellow-green calyx, rather irregularly divided into the five sepals, and below it the long calyx-tube (at times $\frac{3}{4}$ inch long), which to the eye appears to be a footstalk to the flower. At this period the flower has no peduncle, and the ovary lies within the calyx-tube protected by the bracts in the leaf-axil. It is only after the fertilisation of the flower that the true peduncle appears.

Not all the flowers fruit; many never advance beyond the blossoming stage, and have been thought to be male flowers. After fertilisation, as the first preparation towards fruit-ripening, the petals and sepals shrivel, while the calyx-tube is cut off by a ring at the very base. At this time the true peduncle begins to grow, and turns downwards towards the earth, carrying the remains of calyx and corolla as a cap and appendage over the small ovary. Not until the earth is reached does the swelling of the fruit commence; then the cap just mentioned falls off, the scar which is left by the separation of the style at its base becomes exposed, and the young pod, at first sharp at the end, commences to penetrate the soil. At 1 to 3 inches below the surface, rarely deeper, it ripens in the course of a few weeks into the familiar "earth-nut." The usual number of seeds in a pod is two; one is not uncommon, three rare, and four to five occur only in a form which, according to Heuzé (*Plantes industrielles*, ii. p. 135) is found in Costa Rica.

Any flower whose ovary fails to reach the ground fails likewise to produce fruit. Correa de Mello (*Journ. Linn. Soc.* xi., p. 254) records an experiment in which he prevented the flower-stalk from penetrating the earth by interposing an object; in the attempt to round the obstacle the peduncle grew to 4 or 5 inches long, but failed, and the immature ovary died without enlarging. Fruiting is thus dependent on the effectual burying of the young pod. It is obvious that the flowers of the upper part of the stem stand in a disadvantageous position, for they can less readily bury their pods, nor do many of them appear to make the attempt. When harvest comes the plants may be raised from the ground and stacked to dry in the fields, the nuts hanging on to their stalks among the roots; then will be seen on the root-fibres little nodules which are transformed rootlets, altered in internal structure, and of a peculiar use to the plant. Such tubercles are common in the *Leguminosæ*, and by possessing the capability of absorbing free atmospheric nitrogen enable the plant to gain this necessary food in a way not open to other orders of the higher plants. They are indicated in many figures of *Arachis*.

It has been said (Eriksson, *Studier öfver Leguminosernes rotknölar*, Lund, 1874) that *Arachis* lacks these tubercles; such is not the case. Several observers have mentioned their existence, notably Lecompte (*Comptes Rendus Acad. Paris*, 119, p. 302), and specimens from many parts of the world preserved at Kew may be seen to possess them. That they are formed less readily in some soils than in others is stated by Andouard (*Comptes Rendus Acad. Paris*, 117, p. 298), and may well be the case.

Races in Cultivation.

The many different forms of *Arachis hypogæa* which exist, admit of a rough classification into "bunched" and "running" varieties. In the one the stems are erect, in the other prostrate, but ascending at the tips.

Botanists have seized on this difference as a means of classifying the forms, and have applied the names—inappropriate to an American plant—of *africana* and *indica*. The former name embraces the running, the latter the bunched forms.*

Typical among running forms is that commonly grown in Virginia; its spreading branches may have a length of two feet, or even more, and pods are borne on them almost to the tip. The "Spanish" pea-nut" is an extreme of the other type, with several erect stems and the pods crowded at the base—a condition imposed on the plant by the impossibility of thrusting nuts from upper flowers into the soil.

Between these two extremes fall the many forms dispersed over the world; we possess but little information leading to a determination of their relative merits.

Upwards of three quarters of the nuts grown in the United States are sold in the streets for eating. Those most in demand are the Virginian, on account of the relatively small percentage of oil which they contain. Virginia produces two forms; one, as described, "running," the other "bunched." The pods of both kinds are large and white.

Tennessee grows two forms—"white" and "red," so-called from the colour of the seed-coats. The former is a running variety closely resembling the Virginian form; the latter, with seeds less agreeable to the taste, is more or less erect in habit, and favoured as a forage crop.

North Carolina grows a form resembling the African plant in habit, with heavier and smaller pods than those of Virginia; and Georgia produces a red-seeded form, bunched, and with three or four seeds to the pods.

The so-called "Spanish pea-nut," grown in the United States, is a bunched form, alike in favour for forage and for confectioners' purposes on account of the sweetness of its seeds.

Costa Rica produces the form named earlier, whose abnormally long pods contain four or five seeds; in the Argentine one with orange-yellow husks is common.

African forms, despite the application of the name *africana* to the bunched group, are for the most part semi-prostrate. On the Senegambia coast two forms exist, taking their names from the place names of Galam and Cayor. The Galam nut is that which chiefly supplies the exports of West Africa. Rufisque has been

Arachis hypogæa var. *africana*, F. Kurtz in Verhandl. bot. Vereins Brandenburg, 1875, p. 45 is *A. asiatica*, Lour. Flora Cochinch. p. 430, and the "Arachide d'Afrique" of Cordemoy in Adansonia vi., 1866, p. 249; while *A. hypogæa*, var. *indica*, F. Kurtz is *A. africana*, Lour., the "Arachide de l'Inde" of Cordemoy.

De Candolle's var. *glabra* (Prodromus ii., 1825, p. 474) is a hairless form; Hasskarl's var. *aegyptiaca* (Retzia i., 1855. p. 190) is a prostrate form which he thought perennial; Harz's varieties *reticulata* and *vulgaris* (Samenkunde ii. 1885, p. 643) are defined on the conspicuous or obscure reticulation of the pod; we need not concern ourselves further with them.

the chief port of shipment; thence the British Colonies of Gambia and Sierra Leone obtained seed, and practically throughout these dependencies this is the form cultivated. The Cayor nut from Senegambia is coarser, thicker-husked, and yields an inferior oil.

Egypt produces a very prostrate form.

On the Mozambique coast a rather small-podded plant is cultivated (W. W. A. Fitzgerald, *Travels*, London, 1898, p. 259).

Very little information is to hand concerning the varieties met with in Asia. Like the African, the Indian plant is semi-prostrate. Two forms, differing in the colour of the seed, are grown in the Malay Peninsula and in Java; two forms are reported from Trincomalee in Ceylon (*Trop. Agriculturist*, iii., p. 567), two have been introduced into Queensland and North Australia, and two exist in Japan.

Handy (*U.S. Dept. Agric. Farmers' Bulletin*, No. 25, 1896, p. 5) has gathered together the following analyses which place Japanese nuts as richest in oil, in the next rank those from the tropics of the Old World, and those from North America last. His analysis of Alabama nuts is vitiated by an obvious miscalculation, and we omit it.

Origin.	Water.	Percentage in dry substance.				
		Oil.	Proteids.	Soluble non-nitrogenous matter.	Fibre.	Ash.
Japanese:						
"Tojin-mame"	7·50	54·60	26·49	12·64	4·32	1·95
"Nankin-mame" ...	15·61	54·54	32·66	5·99	4·88	1·93
Tropics of Old World:						
Congo	5·01	52·88	28·33	14·51	1·55	2·73
Rufisque	4·59	52·48	29·73	14·02	1·24	2·53
Egyptian	—	52·30	22·97	20·27	1·61	2·85
Bombay	7·71	50·47	33·73	10·15	2·33	3·32
Southern United States:						
Tennessee (1888 crop) ...	3·87	49·35	28·65	17·23	2·37	2·40
" (1889 crop) ...	4·86	48·60	27·07	19·30	2·52	2·51
Georgia	12·85	43·13	30·49	21·86	2·34	2·18
"Spanish," grown in Georgia	13·15	41·17	32·18	20·43	3·50	2·72

Other analyses may be found in Church, *Food Grains of India*, p. 127, Schädler, *Technologie der Fette u. Ole*, and in the *Journal de Pharmacie, Chim.*, sec. 4, xviii., p. 14. Heuzé (*Les plantes industrielles*, Paris, ii., p. 139) places the yield of oil of Spanish grown nuts at 60 per cent.; we are unaware of the authority whence he drew the statement, but believe the amount exaggerated.

Variation with Conditions.

Statements are made to the effect that the hotter the climate in which the seed matures the greater its oil-contents. The first indication of this idea is in the following sentences from the

Annual Report of the United States Department of Agriculture, 1870, p. 93 :—"It is possible that the farther south the nut is grown the more oil will be developed in the seed. The Algerian growth furnishes 25 to 27 per cent. The quantity of oil in the Virginian growth is less than that of Algiers." The last is in the new edition of Semler's *Tropische Agrikultur*, ii., 1899 [dated 1900], p. 457, where we read :—"Like castor-oil seeds, ground-nuts are richer in oil the more tropical the climate under which they are cultivated. West African nuts from near the equator contain 50–55 per cent. of oil, North American only 25–27 per cent., and at times only 20 per cent." Despite the important bearing of such a generalisation, we have been unable to find trustworthy analyses which can be produced in support of it. Those which have been given above emphasise racial differences rather than variations due to the available solar energy. The contention is, however, plausible enough, and may be illustrated by bringing forward the relative poorness in oil which makes nuts from Virginia and the more northern States to be preferred for eating over those from Georgia, Tennessee, Florida, &c.

Proceeding to the effect of the soil upon the plant, there is indication that the oil-contents of the seed fall short in poor soil. Subba Rao (*Bulletin, Dept. Land Records and Agric., Madras*, 1893, p. 280) says the seeds from soil new to the crop are richer than those from village sites, and from red sandy loams richer than those from clays. Seed produced on unirrigated land is richer in oil than that produced under irrigation.

We have to notice next that the pods take upon them the colour of the earth in which they are buried ; red earths produce red pods, and the first ripe pods of a crop are deeper in colour at harvest from having remained longest under ground. There is a set among cultivators and merchants alike against dark-coloured pods which makes such unwelcome. Moreover, in India seed grown on certain dark soils ("pottai-mannu" soils) is rejected for sowing (Subba Rao, in *Bulletin, Dept. Land Records and Agric., Madras*, p. 263). Want of lime causes empty pods. Rich nitrogenous manures promote growth of the vegetative parts, but, so it is said, do not stimulate seed formation.

Soft earth is desired for the burying of the seed, and the practice of earthing-up, done we are told as often as 4–7 times in Spain, is an aid to this end. On hard soils the pods die whenever they fail to penetrate the surface.

The vigour, yield and colour of the seed are thus affected by the soil, and it is further said that an erect habit is at times produced by the soil (Watt, *Agric. Ledger*, 1893, No. 15, p. 9). The oil-contents of the seed appear to be increased or diminished according to the amount of heat available to the plant, but the statements by various writers are too contradictory to allow an unqualified statement.

Uses.

Chief and foremost amongst the uses to which this plant is put must be placed its yield of oil. The trade between the tropics and Europe, by which India and Africa pour the seeds they produce into modern oil mills in France, Germany, England, &c.,

is of recent growth. Older than it is the primitive method by which the negroes both of Africa and America extract a portion of the oil for their service.

The oil, which closely resembles olive oil, replaces it largely in Europe, and is used as salad oil, also in soap-making, burning, dyeing, tanning, and cloth-cleaning. It enters into such salves as cold-cream, pomades, &c. As an oil for lubricating it has some use, and it forms a very important ingredient in the manufacture of oleomargarine. It also forms an adulterant of olive and almond oils, and is in its turn adulterated with poppy, sesamum, and cotton-seed oils.

In India the sweet oil of the bazaars is a mixture of this with safflower and sesamum oils, the seeds being pressed together (Dymock, *Materia Medica, India*, ed. 2, p. 246). Arachis oil finds a further use as an adulterant of "ghi," or clarified butter, and is recognised as officinal in the Indian Pharmacopœia replacing olive oil.

Almost wherever grown, a portion of the produce is converted into oil for local use. In Java it has long served as an oil for illuminating, and for a less period in India. It burns with a clear and smokeless flame, and lasts longer than olive oil in the proportion of $9\frac{1}{2}$ hours to 8 hours per oz., but gives less light.

Japan and China produce a small quantity of oil, which, however, hardly finds its way into the European market, as in a small measure does that from India. In China a medicinal value is attributed to it (Debeaux, *Sur la pharmacie des Chinois*, Paris, 1865, p. 68).

The use of the seed as a food is very extensive. It may be eaten when unripe, and has then, when cooked, the flavour of kidney beans. When ripe, it is too oily to be more than an adjunct to the diet, and Monteiro (*Angola and the River Congo*, i., p. 131) narrates how a balanced food is obtained by the negroes by adding to it such starchy fruits as bananas. Roasted in the shell it is sold in immense quantities in the streets of the cities and towns of Eastern North America.

These seeds in Europe have served as adulterants for coffee, cocoa, and spices. For adulterating coffee they are pressed in moulds and passed as coffee beans (Vogl. *Die wichtigsten vegetabilischen Nahrungs u. Genussmittel*, Berlin, 1899, p. 321). The liquor from them is a clear reddish-brown with little taste. "Austrian coffee" is the name by which this counterfeit product goes. As cocoa they are pounded and mixed with the true material, and the Algerian name "Cacaouette" has reference to this use. Sweetmeats are made from them to a small extent.

The seeds ground finely after being roasted make a butter-like mass, sold as "Pea-nut butter" in the United States (*Agricultural Journal, Natal*, ii., 1899, p. 437). Monteiro, again, states that such a preparation highly seasoned is used to stave off hunger by the people of Angola when on the march. Pounded nuts in the tropics enter into stews and curries. The roots are said to have been used for adulterating liquorice.

The cake left after oil-expression as performed in European mills is a valuable animal food, and some use of it for human beings has been made recently. The meal which the more

primitive mills of China, Java, and India leave serves as a manure in these countries.

The hay is rich in feeding stuffs, as analyses shew (see Uhlitzsch in *Die landwirtschaftichen Versuchs-Stationen*, xli., p. 388, and *U. S. Dept. Agric., Farmer's Bull.*, No. 25, p. 5). It is made use of in Asia to a small extent, and on a larger scale in the Eastern United States. Here, too, after the harvest is gathered hogs are turned on to the land, and grub up pods which have not been collected.

As a green manure for the tropics Arachis has been suggested, for it adds when ploughed in, not only the materials drawn directly from the soil, but also the other food stuffs taken from the air, including the nitrogen which the root tubercles acquire.

Chemistry of the Seed.

Analyses of the seed shew, as already stated, a richness in oil which varies considerably. This oil is a non-drying oil, becoming turbid at + 3° C., and congealing at − 3° C. It consists of the glycerides of four fatty acids, viz. :—olein, arachin, hypogæin, palmitin.

The similarity of ground-nut oil to olive oil is apparent when we remember that the main constituents of both are olein and palmitin.

Starch is present to a small amount.

Albuminoid matter is more abundant, and cane sugar has been detected (Schulze & Frankfurt in *Zeitschr. für physiolog. Chemie*, 1895, p. 511.)

Oils, starch, and albuminoids when found in seeds are reserves for the use of the young plant and are absorbed in germination. Immediately growth starts absorption of these products commences, and the chemistry of the seed is considerably altered. In the place of the fats appear the corresponding fatty acids and glycerine. Obviously oil extracted at this juncture will not have that freedom from taste in which should lie its real value.

We cannot record observations made directly on *Arachis hypogæa*, but analogy indicates that oleic, arachic, hypogæic, and palmitic acids appear in the seed when germination has commenced.

The same acidifying process is produced by fungi, and as these readily attack the seed rancidity is developed when they are present.

It is well known that seeds of many plants cannot be induced to germinate until they have passed a certain period of quiescence. This is not so with *Arachis hypogæa*. At any time a small amount of moisture is sufficient to start the process ; so readily is it induced that occasionally in India germination starts before the crop is dug. Germination started and then checked results in the death of the seed. Such a dead and partly germinated seed contains rancid oil.

A similar amount of moisture will favour the growth of moulds —*Eurotium*, *Penicillium*, &c.—and these finding entrance into the tissues of the seeds by bruised places add to the acidity. Unfortunately Indian nuts shelled by being beaten and thus

bruised, shipped or even stored damp, become rancid ; and experts maintain that they can distinguish oil-cake made from this source by the abundance of fungal threads in it.

Ground-nut seeds do not require much moisture to stimulate growth, though in the complete process of germination they absorb almost their own weight (Bogdanow, see *Just's Bot. Jahresbericht*, 1887, i., p. 207) ; light does not conspicuously deter it (Pauchon in *Ann. Sci. Nat.*, sér. 6. x., p. 98).

The great precautions necessary to prevent growth in seeds reserved for sowing will be mentioned under the head of cultivation. There is reason why the same precautions should not be neglected in the case of seed destined for the oil-mill.

Origin and Dispersal.

That *Arachis hypogæa* is of South American origin admits of no doubt. Writers of fifty years ago, not as abundantly provided with evidence as we are, incorrectly placed its home in the Old World. Those who wish to read the arguments for its origin in America will find a masterly summary in De Candolle's *Origine des plantes cultivées*, to which very little can be added. When the Spaniards were colonising the New World they found that the Indians knew and grew the plant, and one—Oviedo, who was a director of mines in Cuba from 1513 to 1524—says that it was very abundant in their gardens. How long they had grown it we cannot guess, but we find evidence that it was more or less a staple food with them from the occurrence in Peruvian tombs of seeds left with the dead as food for the departed soul on its journey. In the tombs at Ancon, interments of not later date than Pizzaro's conquest of Peru, no seed except that of the maize is more abundant (Rochebrune in *Actes Soc. Linn. Bordeaux*, sér. 4, iii., p. 350).

The French colonists sent by Admiral Coligny to the Brazilian coast became acquainted with it in 1555, and Jean de Léry described it unmistakably.

Ficalho (*Plantas Uteis da Africa Portugueza*, Lisbon, 1884, p. 136) shows that the first distinct mention of its cultivation in Africa is by André Alvares de Almada who published in 1594 an account of travels on the Senegambia coast undertaken thirty years earlier. It was seen by him in considerable quantity in the Archipelago of Bujagoz (Bissagos). Portuguese voyagers of the sixteenth century were ever ready to leave economic products on new shores. The work of colonising St. Helena was begun by them at its very discovery (Melliss, *St. Helena*, p. 2), and probably in the same way Arachis was left on the shores nearer home which we know they frequented for two centuries from this date in pursuit of slaves. Hawkins, our English navigator, led slave-hunting expeditions to this part of Africa, and in 1564 visited the Bissagos Archipelago for the purpose ; the narrative of his second voyage frequently mentions the Portuguese. These facts are given because Ficalho argues the possibility that the ground-nut is alike native in America and Africa, and in order to show that between the date of the discovery of America and that of Alvares' travels, there is time for the establishment of Arachis

in frequented parts. Then, as later with the Arabs, it was the practice of the slavers to ally themselves with a native king in order to raid another's territory.

Clusius (*Rariorum Plantarum Historia*, ii., p. 79, 1601) informs us that the slavers took as food for their captives on the voyage from the Guinea Coast to Lisbon, roots of the sweet potato, which is an American plant, "besides certain nuts"; and these nuts Sir Hans Sloane (*The Natural History of Jamaica*, i., p. 184, London, 1707) identifies as fruits of Arachis. Though Clusius does not give information which puts Sloane's identification beyond doubt, the fact that in the latter's day these seeds were used "to feed the negroes in their voyage from Guinea to Jamaica" is itself strong evidence. And though in 1707 the earth-nuts thus used were brought from Africa with the slaves, a century earlier they were evidently brought from the West Indies (St. Thomas, &c.) with the roots of the sweet potato.

The spread of Arachis in Africa must have been rapid. It is now grown from the Mediterranean almost to the extreme south. Ficalho adduces this wide extension in the continent as an argument against an introduction subsequent to the discovery of America. But other undoubtedly American species have now a similar range, having reached the very heart of the continent from the east and west coasts (P. Ascherson in *Sitzungsbericht d. Gesellschaft Naturforschender Freunde zu Berlin*, 1877, pp. 141–157), nor are parts unknown to which its extension has only just reached (Stuhlmann, *Mit Emin Pascha*, Berlin, 1894, p. 498).

Nearly as early, some region in Malaya or South China seems to have received the plant, which spread rapidly and deceived Loureiro into calling it, in 1790, a native of Cochin China. Rumpf saw it in Amboyna and figures it (1691) as *Chamæbalanus japonicus*. The people of South China seem to have early taken to its cultivation, and thence it spread to Japan and Bengal, getting for itself in both countries, as well as in Java (Hasskarl, *Hortus Bogor.*, p. 233), a name meaning "Chinese bean." It is interesting to note in passing that, according to Bretschneider (*Study of Chinese botanical works*, p. 18) one of its names in China is "Foreign bean." Africa seems to have sent it to the Bombay coast of India a century ago, and about Bombay it has the name of "Mozambique gram" (Dymock, *Materia Medica India*, ed. 2, p. 247). Madagascar, Mauritius, Réunion, &c., have probably received it from the same source.

To North America it spread more than a century ago, and it was cultivated by the slaves in Carolina in the eighteenth century. There is evidence that it was grown in Virginia in 1781 (Sturtevant in *American Naturalist*, xxiv., p. 150).

At the end of last century its cultivation as a crop in Europe was first attempted; and at a later date Australia and some of the Polynesian islands received it.

To how wide a range of latitude it is suited is shown by this extensive dispersal. Probably the furthest north to which it can be grown is in Central Europe, *e.g.*, Austria; in the United States it is grown to 38° N., while the furthest south at which it is found is 30°–35° S. latitude.

Mention has been made of the use which the slavers made of ground-nuts as food for their captives. They drew their supply at first, it seems, from the West Indies; later it came from the Guinea coast. This traffic and attempts to grow the nut in other more northern places helped to familiarise industrial Europe with it.

Even as early as 1697 Stisser grew it in Brunswick (Flückiger and Hanbury, *Pharmacographia*, ed. 2, London, 1879, p. 187); in 1712 it had been cultivated under glass in England (see *Trop. Agriculturist*, iii., 507), and in 1723 it was in the Royal Garden at Montpellier, where, however, it soon died out (Heuzé, *Les plantes industrielles*, ii., Paris, 1893, p. 130). Tenore says that in 1774 it was again in England; and in 1769 Sir William Watson showed pods and the oil to the Royal Society, while he read a memoir on it, communicated to him by George Brownrigg of North Carolina (*Phil. Trans.*, lix., pp. 379–383).

In 1787 a great quantity of seed was brought to Spain and Portugal, where its cultivation promised well, and it is of great interest to learn from Tenore, who himself experimented with it in Italy (*Napoli, Atti Ist. Incorr.*, i. (1811), p. 31), that in 1807 the uses of its seeds were to yield an oil for soap-making and as a substitute for almond oil in pharmacy, while powdered, they served as a substitute for cacao ($\frac{1}{3}$ Arachis seed mixed with $\frac{2}{3}$ Cacao), or were added to flour in making bread. France was anxious to obtain it, and from Heuzé's account—more correct than that of any other recent writer—the following is borrowed :—

"In 1801, Lucien Bonaparte, then Ambassador at the Court of Madrid, sent seeds to M. Méchin, prefect of the department of Les Landes (the province to the south of Bordeaux), suggesting that he should try to grow it on the sandy soil of those parts. When the first trials had succeeded, M. Méchin printed a detailed account of how to cultivate it and circulated it among those who were willing to repeat his experiments. As a result Arachis was widely grown on a large scale in the departments of Basses-Pyrénées, Pyrénées-orientales, Gard, Bouches du Rhône, Vaucluse, Isère, Aude, and Drôme. Everywhere people were convinced that it was a reliable oil-seed, and would assuredly grow in Southern France. The political troubles of 1808 to 1815 stopped the experiments, and the cultivation of Arachis was abandoned. Again in 1820 to 1822, at the time when the olive-yards were in a large measure destroyed by frost, fresh experiments took place, ill-conceived, ill-directed, and without result. The farmers who had undertaken them, in abandoning the enterprise, reported that shelling the seeds was necessary before obtaining the oil, and that this was a difficult operation, and, secondly, that there was no market for the oil."

Again, the winter of 1830 wrought serious havoc in olive-yards (Coutance, *L'Olivier*, Paris, 1877, p. 210), and for some time olive oil remained at a high price. This led the wool-carders to seek some lubricant as a substitute. Ground-nut oil, in 1837, was found to serve. A Marseilles firm had put on to the market as an experiment some four or five kilogrammes (Dumas ex Poiteau in

Ann. Sc. Nat. sér. 3 xix., p. 270) derived from the crushing of seed sent from Gambia. From this the trade takes its origin. French settlements benefited first, and Gambia, where they possessed one, as well as Senegal sent increasing quantities to Marseilles year by year. Other parts of Africa commenced to export nuts, notably Algeria, Sierra Leone, and Angola. Pondicherry, too, began to send shipments, and the trade thence received a great stimulus by the opening of the Suez Canal in 1869.

Some idea of the growth of the trade may be obtained from the statement that ten or twelve years after the first importation the output of Marseilles had reached seventy million kilogrammes of oil (1,377,482 cwt.). Barcelona, near which, as already mentioned, experiments in growing Arachis had commenced in 1787, entered into competition with Marseilles. Spain proved not unsuited to the crop, and thence comes the record that 700 pods have been obtained from a single root ; but the output of oil from Spain is not great.

Another attempt at production in France took place in 1839 and 1840, when a M. Chaise, who had been in Senegal, grew near Dax some five hectares (12⅓ acres), with results beyond his expectation. Still, as Naudin reports (Naudin and Mueller, *Manuel de l'Acclimateur*, 1887, p. 139), the cost of production was too great, and despite M. Chaise's big crop no further attempts to produce the plant in France have occurred. From Losoncz in Hungary a more recent successful attempt is reported (*Just, Jahresbericht*, 1878, ii., p. 478) but it is not clear that profit can be derived.

The trade in ground-nuts thus remains one by which the tropics feed the mills of Europe.

Genoa, Bordeaux, Nantes, Dunkirk, London, Rotterdam, Hamburg, and the Baltic ports have entered into competition with Marseilles, and the Mozambique coast of Africa has commenced to export in large quantity.

In this process of decentralization, though France still remains *facile princeps*, Marseilles no longer holds the same large share in the commerce which fell to that port thirty years ago. Almost 100 million kilogrammes of Arachis were imported into France in 1898, chiefly in the pods, but partly decorticated, to a value of over £836,000, and representing 76,900,984 kilogrammes of kernels. In the same year Marseilles imported Arachis to the amount, represented as kernels, of 27,098,100 kilogrammes. The proportion of the trade which fell to Marseilles was then a trifle more than one-third of the total of France.

The figures upon which the above statement is based were kindly supplied to Kew by the Statistical Department of the Board of Trade. From figures from the same source the following table of recent imports to France has been calculated :—

Average.	In the shell.	Decorticated.	Total as kernels.
1892–4	75,123,313	105,816,151	163,661,102
1895–7	57,516,807	46,791,922	88,513,197
1898 ·	93,684,247	4,764,114	76,900,984

The imports of Germany, which between 1880 and 1887 (Uhlitzsch, *l.c.*, p. 397) averaged 8,395,000 kilogrammes have increased so that during the last three years they have been :—

Year.	Kilogrammes.
1896	12,390,600
1897	15,187,800
1898	12,776,100

Italy, too, has increased her imports of oil-seeds, but no special statistics for ground-nuts are available.

Supply of Europe.

Gambia, which sent 13,200 cwt. to Marseilles in 1837, was followed by Senegal in 1840 with a small shipment. The increase in the exports then became rapid. In 1860 Gambia exported to the value of £79,612, and Sierra Leone to £34,514; in 1870 these two colonies exported the one to the value of £121,329, the other to £95,605 ; and the trade became the most important one of this part of Africa, and continues to be so.

Angola entered into competition with Gambia but heavy taxation checked and partly destroyed the Angolan trade (Monteiro, *op. cit.*, i., p. 133, and Ficalho, *op. cit.*, p. 139).

The Indian trade, owing to the length of the journey round the Cape, took no great dimensions until after the opening of the Suez Canal in 1869. Then came a rapid development, Pondicherry being the chief centre. Indigo had been a leading concern of this French settlement, but the natives who dealt in it suddenly discovered that Arachis offered a better market, and for a time the trade taxed the capabilities of the port to the uttermost. In 1883 the demand for storage space was so great that every available dwelling-house was rented by the merchants. In 1886 three special "nut" trains had to be run daily for some time from Panruti in the chief producing district to Pondicherry, while Pondicherry, Panruti, and the surrounding villages remained full of them (*Trop. Agriculturist*, iii., p. 12 ; vi., p. 31). In 1891 space was totally inadequate to meet the increased traffic, despite the use of "twelve new export sheds and ten large naval coal go-downs" (*Trop. Agriculturist*, x., p. 867).

About three-quarters of the nuts exported from Pondicherry were grown in the British territory adjacent to the French settlement. Nuts likewise found an outlet through Madras, and those produced in the Bombay Presidency through Bombay.

Statistics are available of the exports from British India, but not from Pondicherry ; under these circumstances it is hardly useful to give them. As a substitute a table is offered of the acreage under the crop for the years from 1882 to 1898 in the Madras Presidency ; it shows the increase to the climax in 1890 and the subsequent fall. The figures are taken from Subba Rao's paper quoted before, and from the *Revenue Report* on the crop in Madras (G.O., Nos. 773, 773A, p. 7).

Acreage under Ground-nuts in the Madras Presidency.

Year.	Acres.	Year.	Acres.
1882–83	73,568	1890 91	258,313
1883–84	98,536	1891–92	201,344
1884–85	145,976	1892–93	226,905
1885–86	161,607	1893–94	247,796
1886–87	153,013	1894–95	226,147
1887–88	141,507	1895–96	243,350
1888–89	211,890	1896–97	157,234
1889–90	279,355	1897–98	83,715

The fall in interest subsequent to 1890 is not peculiar to Madras, it is observed, too, in the Bombay Presidency, and the French Chamber of Commerce at Pondicherry has recognised the necessity of investigating the cause, while the decreased imports to Marseilles have caused concern there.

As most of the nuts sent to Europe from India are decorticated first and those from Africa are sent undecorticated, we can recognise the effect in the following table of Marseilles imports. In the third column the total imports are calculated as kernels, *i.e.*, 23 per cent. of the weight of undecorticated nuts is deducted for the shell. The basis of the table is one in the *Comptes Rendus de la Chambre de Commerce de Marseille*, 1897 and 1898, and the proportion of kernel to husk is based on figures given by Uhlitzsch (*l.c.*, p. 388). Simmonds (*Tropical Agriculture*, London, 1877, p. 402) only allows to the husk 1 per cent. of the total weight—an impossibly small amount; Heuzé gives it as 26–28 per cent., and in some pods weighed at Kew, in a very dry condition, it was found to be about 25 per cent. To place 77 per cent. to the kernel is therefore a liberal allowance.

Average annual Import of Ground-nuts in quintals into Marseilles in periods of three years. (1 *quintal* = $110\frac{1}{4}$ *lbs. or approximately* 1 *cwt.*)

Years.	Undecorticated.	Decorticated.	Total as kernels.	Decorticated. Average price per 100 kilos.
				francs.
1877–79 ...	584,782	69,532	519,814	43
1880–82 ...	627,579	316,930	800,166	35
1883–85 ...	398,700	499,612	806,611	33
1886–88 ...	124,535	739,408	835,301	28
1889–91 ...	208,740	1,084,023	1,244,753	28
1892–94 ...	336,147	1,010,517	1,269,350	26
1895–97 ...	265,407	464,473	668,836	26
1898	632,860	54,660	541,962	—

It is true that the export of oil from Madras, &c., has slightly increased, as the next table below shows, but this is in no measure proportional to the great decrease in exports of nuts.

Export of Oil in Gallons from Madras Presidency.

	Foreign.	Coastwise.	Total.
Average of 5 years ending 1887–88 ...	6456	266,925	273,381
„ 3 „ „ 1890–91 ...	7126	46,919	54,045
„ 3 „ „ 1893–94 ...	7907	14,997	22,904
„ 3 „ „ 1896–97 ...	1459	609,790	611,249
Year ending 1897–98 ...	3049	508,254	511,303

It seems that to meet the demand in Marseilles in 1898 large shipments were made of undecorticated nuts from Africa, and judged by the extensive cultivation on that continent it is possible that the demand may be fully met. The possibilities of the West Coast of Africa are not yet fully developed. W. W. A. Fitzgerald remarks (*Travels in Coast Lands British E. Africa*, p. 213) that "The soil of the coast lands is just what is required for its cultivation."

Exact information on the subject of the trade of this side of Africa has hitherto been wanting, and in view of the evidently considerable possibilities the following abstracts from a report by H.M.'s Consul at Mozambique will be of interest.

"The ground-nut is collected by natives, by whom it is largely used as an article of food; it is also sold by them in great quantities to the Indian merchants or to the holders of Prazos (*i.e.*, tenants), by whom it is either passed on to European firms on the coast or exported independently.

"From such statistics as I have been enabled to obtain from the Portuguese Custom Houses on this coast it would appear that the bulk of the ground-nuts which find their way to Europe from Portuguese East Africa are shipped from the northern ports of the province, that is to say, from Ibo, Mozambique, Quilimane, and Chinde. It is evident from the figures I have received from the three first-named places that Quilimane is by far the most important of them in relation to this commodity; but although, unfortunately, I have been unable to procure any precise information from the Custom House at Chinde, I am able to state from my personal knowledge of the place that the output from Chinde approaches that from Quilimane, its neighbouring port. This will be the more readily understood, perhaps, when it is explained that Chinde receives the entire trade of the extensive Zambezi valley, and, similarly, all the articles of import received, not only from the Zambezi, but from the vast countries to the north and west, are shipped from Chinde. It will, therefore, be seen that the amount of ground-nuts exported from the two places is very large. Moreover, there has been established at Quilimane during the past year an extensive soap and oil manufactory, which possesses certain profitable monopolies for the manufacture of those two articles in the province and elsewhere. As these goods are manufactured entirely from ground-nuts and other locally produced oil seeds, it follows that a considerable quantity is used in this way. If we were in a position to add to the quantity of ground-nuts actually exported from Quilimane and Chinde the number of tons used locally in the soap and oil manufactory, the amount of this produce collected in the district,

with that shipped from the Zambezi, would doubtless reach an astounding total.

"On the table which follows it will be noted that the increase in the exports of ground-nuts in 1898 is considerable, and this is the more remarkable when it is understood that the natives in the northern portion of the province have often great difficulty in reaching the coast with their produce by reason of the terror inspired by the marauding tribes by which the country is infested. I am informed that a large quantity both of rubber and ground-nuts is annually lost to commerce, the natives being surprised in the act of conveying it to the coast and put to flight, while the result of their labours for, it may be, many months is left rotting on the ground.

"As I have previously endeavoured to explain, the ground-nuts are collected entirely without supervision, and in quite a haphazard way, and sold to the exporter on the coast. From what I have been enabled to glean very few find their way to the United Kingdom, the bulk going to Hamburg and Rotterdam, whilst a certain quantity are despatched to Marseilles."

Return of Ground-nuts exported from below-mentioned Ports in 1897 *and* 1898.

Ports.	1897.				1898.			
	Tons.	Value.			Tons.	Value.		
		£	*s.*	*d.*		£	*s.*	*d.*
Ibo	55	742	10	0	85	1,147	10	0
Mozambique	2,065	27,877	10	0	5,190	70,065	0	0
Quilimane	2,470	33,345	0	0	6,397	86,359	10	0
Chinde (approximate) ...	2,000	27,000	0	0	4,500	60,750	0	0
Total	6,590	88,965	0	0	16,172	218,322	0	0
Total export during 1897	6,590	88,965	0	0				
Increase during 1898 ...	9,582	129,357	0	0				

Like the Indian trade, that of the Argentine Republic, never very large, has fallen since 1891; a table of the importations of Europe thence may be seen in Semler's *Tropische Agrikultur* (ed. 2, ii., p. 461).

Lastly, a word about China. China, as stated above, an early home of Arachis in Asia, still grows large quantities, especially in the Yangtze-Kiang valley. Chief of all as a port of shipment, not only of nuts, but of oil, is Chinkiang, at the mouth of this river, and a large proportion of the exports finds its way to Hong Kong thence to be shipped to other countries. Shanghai, too, in the same region sends a considerable quantity of oil to Hong Kong, as also Chefoo in the north, and Pakhoi in the south. In the extreme north Tientsin has a large trade in nuts, but for the most part internal. Besides Hong Kong, Swatow Lungchow and Chefoo export nuts and oil from China to foreign countries, but in small measure, and the effect on the European market remains very small.

Demand and Production in the United States.

After the Civil War there sprang up in the cities and towns of the Northern United States a liking for roast ground-nuts, which are sold in the streets at every corner. The soldiers of the northern army brought back the taste for them as a result of their invasion of the south (*Annual Report, U.S. Dept. Agriculture*, 1868, p. 220). Both armies had occupied Virginia in turn, where the farmers all grew small patches for their own use.

Reference to the Monthly Reports issued by the United States Department of Agriculture enables us to follow the growth of the demand.

In those for 1869 we learn that in Virginia tobacco land which did not pay was being put to the new use of growing pea-nuts. In those for 1870 an account of the North Carolina crop is given showing its extension. In 1871 (see *Reports* of that year, p. 494) the crop of Virginia had reached 225,450 bushels, in 1874 (*Reports* for 1875, p. 512) it had reached 382,610 bushels, and in 1882 (Jones, *The Pea-nut Plant*, New York, 1896, p. 66) it reached 1,250,000 bushels. Other States meanwhile were growing pea-nuts, and Tennessee, in which it was extending in 1872 (see *Reports*, p. 488), produced in 1882 460,000 bushels, while North Carolina raised in the same year 140,000 bushels.

The heavy demand and insufficient production within the United States fostered a trade between Africa and New York, &c., which the increase of internal cultivation, as shown above, and a tax on all nuts imported from Africa ultimately more or less arrested. Statistics derived from the *Year Book of the U.S. Department of Agriculture*, 1897, p. 340, demonstrate the decrease.

Average Annual Import of Pea-nuts and other Ground-nuts into the United States, by decades.

Years.	Quantity.	Value.
	Lbs.	$
1865–1870	6,522,844	184,465·49
1871–1880	1,849,645	46,662·16
1881–1890	170,593	3,314·24
1891–1897	149,672	2,655·13

Shelled pea-nuts being excluded from the preceding table, that which follows from the same source supplements it.

Average Annual Import of Shelled Pea-nuts and other Ground-nuts into the United States, by decades.

Years.	Quantity.	Value.
	Lbs.	$
1865–1870	391,006	13,713·89
1871–1880	375,342	14,974·95
1881–1890	54,960	2.223·97
1891–1897	21,658	2,623·09

The imports of decorticated nuts in 1897 were only 1,000 lbs., of ground-nuts in the shell, 138,102 lbs.

The exclusion of foreign nuts is well shown by the above figures, which may be taken in conjunction with the statements that in years of low prices the cost of transport precluded the importation of African nuts (*Journ. Applied Science*, 1881, p. 81), and that in 1894, owing to the tax, nuts sent from Africa met with no market (*U.S. Consular Reports*, Oct., 1894, p. 240).

Expression of the Oil in Europe.

The oil is expressed from the seeds in the following manner, as described by Dr. P. Uhlitzsch (*Die landwirtschaftlichen Versuchs-stationen*, xli., 1892, p. 400) :—"When by means of brushing the pods the unshelled nuts have been cleaned, they are broken between rollers and passed on to a fan which winnows out the light pieces of husk. When the seeds are sufficiently broken they are packed into a cylinder in thin layers, each layer separated by a cloth of horsehair. The first pressing is but slight, the resulting cakes are very flat, loose, and easily broken. The cakes are then broken and ground up finely in a mortar, sprinkled with water and mixed with any meal which passed through the holes in the cylinder at the first pressing. Then follows the second pressing. Mills which only make table oil express twice in the cold, or on the second occasion in very slight heat ; but usually the nuts are pressed three times.

"The first expression in the cold gives an almost colourless oil with agreeable taste and smell, which serves as a pure table oil, and is used for making oleo-margarine ; the second yields a 'sweet oil,' and the product is also used for burning ; the third expression, made with heat, gives an oil—rabat oil—of a yellow colour and hardly agreeable taste and smell, which is used in soap-boiling.

"By these different pressings 30–40 per cent. of the oil is removed in something like the following proportions :—

"1st expression, 16–18 per cent. of a fine table oil.
"2nd „ 7–8 „ of a table oil or illuminating oil.
"3rd „ 7–8 „ of an indifferent oil.

"The oil-cake left contains about 7·5 per cent."

Such is the result of expression carried on at the mills of Hamburg, Berlin, Marseilles, Rouen, &c. According to Heuzé, the nuts in Spain, when pressed as soon as gathered, often give 60 per cent. ; in Italy 50 per cent. is obtained, in India, 43 per cent., in Senegal, 30–33 per cent., and at Pondicherry, 37 per cent.

The bags used in the process are made of horse hair or wool. The cake varies in shape according to the machinery used. Those made in Riga are twice as long as those made in West and South Germany.

When it is intended to devote the whole of the oil to soap-boiling, chemical means are used in its extraction—carbon bisulphide, petroleum-ether, benzene or canadol. The use of such substances as carbon bisulphide obviously leaves the cake unfit for food.

The Indian Oil Mill.

The Indian oil mill was described by Subba Rao in the *Bulletin of the Department of Land Records and Agriculture, Madras*, p. 283 (No. 28, 1893), in the following way :—

"The oil is expressed locally in native mills of the ordinary rotary pestle-and-mortar pattern. The chief centres of this trade are Valavanur (700 mills), Panruti (200 mills), and Pondicherry (200 mills). A single charge for a mill is from 15 to 18 Madras measures of seed (about 15–18 lbs.), which must first be thoroughly dried. During the pressing water is added to the seed in small quantities. After working for about half-an-hour, oil begins to collect and the kernels to cake. The cake is then loosened with a crowbar, and about $\frac{1}{4}$ lb. of old ground-nut cake dust is mixed with the mass, and work is then resumed. In 45 minutes from the commencement of the work about three measures of oil are ladled out of the mill. The cake is again loosened from the sides of the mill and the crushing continued. About five minutes afterwards a strip of cloth is dipped in the mill and the oil absorbed is squeezed into the pot. In this manner about a measure of oil is taken out. Thereafter the oil is taken up on a brush or a bunch of fowl's feathers and squeezed out into the pot. The cake is then again loosened and broken up. About an hour after commencing the work, the oil collected in the lower cavity is removed by a strip of cloth fastened to an iron rod about 2 feet long, which is dipped into it. In this manner another measure of oil is removed. Then another handful of ground-nut cake dust is added to prevent the adhesion of the cake to the pestle. After about one hour and a quarter a torch at the end of an iron rod is lit and moved slowly all round close to the cake while the mill is working. For about 10 to 15 minutes the cake is thus heated, the object being to increase the out-turn of oil. In an hour and a half the work is over and the cake is dug out and put by. The last of the oil (about $\frac{3}{4}$ measure) is taken out. In North Arcot and Chingleput districts the use of the torch in connection with the work of the oil mill is unknown. The out-turn of oil is about 25 per cent. by measure, or 33 to 37 per cent. by weight of the kernels crushed. The oilmongers are paid for crushing the seed Rs. 7 or Rs. 8 per candy of oil delivered to the merchants."

Oil-expression elsewhere.

In China, Java, and Japan, a certain amount of oil-expression is done. No one, it seems, has described the Chinese mill used for the purpose, but presumably it is the same as that used for expressing other oils.

In Java the seeds are dried in the sun before being passed into the press.

The method of obtaining the oil in Angola is thus described (Monteiro, *Angola and the River Congo*, i., p. 132) :—

"The nuts are first pounded into a mass in a wooden mortar; a handful of this is then taken between the palms of the hands,

and an attendant pours a small quantity of hot water on it, and on squeezing the hands tightly together the oil and water run out. Since the great demand for, and trade in the ground-nut, but little oil is prepared by the natives, as they find it more advantageous to sell the nuts than to extract the oil from them by the wasteful process I have just described."

Oil-Cake.

After the expression of the oil a rich cake remains. This has been extensively used as an animal food, and when more or less free from fragments of shells and adulterants such as the starchless crushed seeds of the poppy—the commonest admixture—is of high nutritive value.

Naturally the composition of the cake varies considerably according to the degree of completeness in which the oil has been removed. Subjoined are five analyses, drawn from various sources; in the sixth column is the mean of seven closely similar analyses given by Dr. Uhlitzsch (*l.c.*, p. 413).

	Nördlinger, ex Masori in *U.S. Consular Reports*, April, 1894, p. 686. Peanut grits made from (? German) cake.	Muters in *Food Journal*, iii, (1873), p. 104.	Voelcker in *Improvement Ind. Agric.*, p. 417; made from Indian cake (decorticated).	Tuson in *Pharm. Journ. and Trans.*, Ser. 3, vii, 332, made from Marseilles cake, 1878.	Watt in *Agricultural Ledger*, 1893, No. 15, p. 31, made from Calcutta cake.	Uhlitzsch in *Die landwirthsch. Versuchs-Stat.*, xli., p. 413; essence of seven analyses made in 1892, from cakes chiefly German
Water	6·54	9·6	8·10	9·58	10·10	8·6
Oil	19·37	11·8	7·26	7·40	9·16	7·4
Nitrogenous Matter ...	47·26	31·9	47·81	42·81	48·55	48·1
Starch and digestible fibre.	19·06	37·8	25·02	27·63	22·53	23·5
Indigestible fibre ...	3·90	4·3	4·86	7·87	4·73	5·1
Ash	3·87	4·6	6·95	4·71	4·93	5·9

All these agree in allowing an extreme richness to the cake, and this is borne out by experiments in stock feeding which need not be detailed.

Subba Rao (*l.c.*, p. 283) tells us of the use of cake for human food when famine presses in India; Handy speaks of its use in the Southern States between 1861 and 1865 (*l.c.*, p. 21). Of further interest are the attempts to use it in the same way in Europe. The first advocate was Dr. Muters, whose analysis is quoted above; a second is Dr. Nördlinger. Both avail themselves of the removal of much of the oil to obtain a highly nitrogenous and nutritious food, not over rich in one of the elements of a balanced diet.

Dr. Nördlicher's preparations as made by the Rademann Food Product Factory take four forms :—

Pea-nut grits (Erdnussgrütze).
Pea-nut flour (Erdnussmehl).
Pea-nut biscuits.
Diabetic chocolate biscuits.

The first is a coarse meal, the second a flour, both giving on analysis the following :—

Water	4·8
Protein substances ...	48·5
Oil	22·0
Carbohydrates	17·9

The first kind of biscuits is composed of the pea-nut flour with the addition of a starchy flour, which raises considerably the percentage of the carbohydrate elements, while the second kind, in which starchy stuffs are a disadvantage, is composed of the pea-nut flour with no considerable admixture.

For some time the Soja bean has been employed as a dietetic for those suffering from diabetes, and Dr. Nördlinger points out that Arachis, besides being very much cheaper, has, after the extraction of the oil, a greater percentage of nitrogenous food and not much less fatty food.

Since 1893 these products have been in the market. They have further been the subject of experiment under Dr. Führbringer in a hospital in Berlin, where, it is reported, most of the patients, who were suffering from the usual variety of complaints to be met with in a public hospital, willingly eat pea-nut soup offered to them. Also the experiment of supplying them in the army rations has been tried.

It is worth noting in passing that Dr. Nördlinger's analysis—the first of the series given—shows a richer cake by far than is usual.

It cannot be denied that on chemical investigation the feeding value compared with the cost is immense. The great question is in the palatability of the products offered.

Cultivation.

It is in the Eastern United States that the greatest intelligence has been applied to the raising and harvesting of the crop. A description of the methods in vogue in Virginia may well serve as a basis for contrasting the manner elsewhere.

The soil is reduced to a fine tilth, the preceding crop—maize, cotton, or tobacco—having been one which leaves the surface in a clean condition. Probably a rich supply of marl or gypsum, if not put on the land when under the former crop, is given. Then the seed, which has been left in the pods all winter, is shelled and its power of germination tested. The farmer is advised to make more than one trial, to test a few seeds indoors first, then a larger number in the open, and not to sow till he is satisfied that he can obtain a crop. As a further precaution it is necessary,

when the shelled seeds have to be kept for some little time before sowing, to keep them in small bags or baskets, lest they heat and lose all power of growing.

The seeds are set by hand on the ridge, a bushel to a bushel and a half of pods (*i.e.*, 24–36 lbs.) giving seed enough for one acre. The ridges should be $2\frac{1}{2}$–3 feet apart, and, when the plough has prepared them, an ingeniously simple machine known as the "dotter" is run along each pair of ridges before the hands, marking by means of spikes on its wheels the spot where each seed is to be set. The hands following place a single seed into each hole at a depth of $1\frac{1}{2}$–2 inches, and cover it with the foot. Within seven to ten days from planting the seedling appears at the surface, and then any spots where failure to germinate has occurred are resown. The after workings are ploughings and weedings, three or four in number; in the second ploughing the earth of the intervening space is thrown towards the plants in order to help the pods to bury themselves.

The crop is sown in May, or at times late in April or in June; flowering begins in July and lasts a month. The plant can stand a good deal of dry weather.

Harvesting is commenced in the end of September and continued through October. A plough with a narrow mould-board is run along each side of the rows and the soil round the plants loosened. Then the vines are lifted by hand, shaken free of earth, and left for a day or two to wither. After this the plants are placed round stakes into small shocks, under, and often also over, which is laid a board as protection from the moisture of the soil or from rain. Thus left the pods are cured in the air. The last process is to pick the nuts, a troublesome piece of work done by hand, which is accompanied by grading and cleaning the pods for market. There also exist factories which buy the pea-nuts, clean and grade them, and sell them again. In doing this "pops," or empty pods, are removed. Such empty pods are said to be most abundant when there is a lack of calcareous food in the soil, or as an effect of dry weather.

Pods which remain in the soil are picked out as far as possible on ploughing the land, and hogs turned on to grub out and feed on what is left, lest the plant become a tiresome weed in the next crop. The hay, too, is saved in as good condition as may be for a food for animals.

Modifications of this method are commonly practised. At times the ridge system is forsaken, and planting done on the flat. As is well known the relative advantages for the two systems depend chiefly on the depth of the soil and amount of moisture available. Various mixed manures are given; and the distance between the rows varied with the variety chosen and the fertility of the earth.

Quite recently a little attention has been directed to the culture on irrigated lands (see *Bulletin, Florida Agricultural Station*, 26, 1899, p. 26), but the results are not to hand.

On land new to pea-nuts the crop is usually heavy, and the ridges are at least three feet apart. After a few years under pea-nuts the growth becomes less vigorous, and the rows may hardly meet at a distance of $2\frac{1}{2}$ feet.

A striking contrast to this is the custom in Gambia to sow the rows a foot apart. Here the land is ploughed and the seed dibbled

in on the ridge as in the States. The standing crop is weeded, and ultimately ploughed up. In Angola, Monteiro tells us (*op. cit.*, i., p. 129) the ground for pea-nuts—good soil in a river valley a little way inland where the comparatively arid coastal strip ceases—is cleared and the weeds burned; then, with a primitive little hoe, women stir the soil to the depth of a few inches, and the seeds are dropped in and covered up. Put in the ground in October or November, the crop is not removed until July or August, though the nuts are ready to be eaten green in April.

In India care is taken to get the soil into a good state of tilth, and as in the United States lime is regarded as a valuable manure. Subba Rao (*l.c.*, p. 226) says that silt containing lime to the extent of 22 per cent. was applied at the rate of 100 cart-loads per acre when the land of certain villages was first brought under ground-nuts, and afterwards at intervals of a few years. Animal manure is regarded as beneficial only when applied to the preceding crop. Ashes are largely used, at the rate of 10 to 30 cartloads per acre a cart-load being about a ton. Indigo refuse is rarely used. It is considered that organic manures do harm rather than good if there be a long drought after application.

Seed required for sowing is kept in the pods until required. It is recognised that it will not keep for more than a year, and that it must be well looked after, it being desirable when the pods are in large quantities to dry them once a month. As a rule seed is shelled before sowing, but this is not always done, for sometimes one-seeded pods are picked out and sown. Shelling is done if possible not more than five days before sowing, and requires great care in order not to injure the seeds. Women perform the task, and the price paid for shelling for seed is thrice that for shelling for commercial purposes.

Sowing on unirrigated land is done between the middle of May and the middle of August, but chiefly between mid-June and mid-August. On irrigated lands the sowing does not as a rule commence till August and is continued till October. The seed is always sown thickly, 90 or even as much as 112 lbs. going to the acre. The seed is sown in the furrows made in ploughing, is always hoed in, and the fields watched against the depredations of jackals, crows, &c. It is hoed by hand during growth, and watered in January or earlier if necessary. In one place it is the custom to trample down the stems to bring them nearer to the soil.

The crop matures six months after sowing; the haulms, if forage is scarce, may be then grazed or cut for fodder, or the land ploughed and the plants lifted. Any pods on the haulms are then plucked and added to those gathered from the soil during successive ploughings or by digging. If within a week after the haulms have been gathered on unirrigated land the soil be not dug up and the ground-nuts plucked, it is said that the seed will not be good for sowing though good enough for other purposes.

Heavy rain at the time of harvest causes the seeds to germinate in the pods and great damage to the crop, including the hay.

A labour-saving device which may injure the pods is in use in some parts on irrigated ground. The ground, which must be

dry, is ploughed and then flooded; the pods, if perfectly dry, float, and can easily be swept with a broom to one corner of the field. In such a course the pods are allowed to dry for fifteen days between the ploughing and flooding, for, unless perfectly dry, they do not float, nor in any case will they float for long.

In India the produce rarely comes to the market unshelled. The pods in shelling are cracked by being beaten with a stick; the shelled seed is then winnowed and the shells used as fuel or as manure or are wasted. "Kernels" are generally sold by weight, and to increase their weight the ryots add water to the pods before shelling them at the rate of about 16 Madras measures for 1,400 Madras measures of pods.

The details of commercial cultivation in China are unknown. The nuts ripen at Chefoo in October (Williamson, *Journey in North China*, London, 1870, ii., p. 438); a light and sandy soil is chosen for their growth (Hosie, *Three Years in Western China*, London, 1890, p. 83). The earth in which they have grown may in the harvest, after a preliminary ploughing, be passed through a bamboo sieve lest any nuts should be lost (B. C. Henry, Lingnam, London, 1886, p. 239), and after the extraction of the oil the refuse is used for manure (Williams, *Middle Kingdom*, London, 1857, ii., p. 105).

Yield.

In Virginia the yield formerly stood at 50–75 bushels of pods per acre: this is equivalent to 1200–1800 lbs. It has since fallen immensely, and we read (*U.S. Dept. Agriculture, Farmers' Bulletin*, No. 25, p. 4) "within the last few years this crop has ceased to be as profitable as heretofore. The method of culture —the annual planting of nuts on the same land, the complete removal of all the vegetation from the land, and the failure to replenish the soil by means of fertilisers—has been a great factor in reducing the profits of the crop, so that now instead of an average of 50 bushels per acre, with frequent yields of over 100 bushels, the average is not over 20 bushels, while the cost of cultivation has been but slightly reduced."

Undoubtedly *Arachis hypogæa* is a most exhausting crop. Cultivators in America knew long ago that their second crop was less vigorous than the first and drew the rows closer together; but the exhaustion of the soil has been allowed to reach the extreme above depicted. Under these conditions the trade is maintained as it is, chiefly by the tax on imported nuts.

The yields obtained in the United States are far exceeded under irrigation in the tropics. Subba Rao gives the upper limit for Madras as 5,000 lbs. to the acre. According to the same writer, in the season of 1892–93, under very favourable circumstances, it reached 3,600 lbs. to the acre on unirrigated land, but the most common yields ranged between 180 and 720 lbs., *i.e.*, 7·5–30 bushels.

In Semler's *Tropische Agrikultur* (2nd ed., ii., p. 461) the yield in the Argentine is given as about 1,250 lbs. to the acre.

Holtze obtained at Port Darwin in North Australia 3,024 lbs. to the acre (Mueller, *Select Extra-trop. Pl.*, ed. 9, p. 50). Paillieux and Bois (*Potager d'un Curieux*, Paris, 1898, p. 32) give the yield

in Senegal as 2,000 kilogrammes per hectare, *i.e.*, 1,780 lbs. per acre. In his experiments in South France, mentioned earlier, M. Chaise obtained the large yield of 2,200 kilogrammes per hectare or about 1,960 lbs. (Heuzé, *op. cit.*, p. 139).

Experiments have been tried in Florida with this plant on irrigated land, but the yield is not known to us.

One thing is very evident, that the size of the crop depends largely upon intelligent cultivation.

The yield of haulms per acre is given by Subba Rao (*l.c.*, p. 275) as 1 ton per acre, by Handy for the United States as 1-2 tons per acre.

Concluding Remarks.

We have followed the history of *Arachis hypogæa* from its discovery by the early colonists of the New World to the present time, and have seen reason for tracing its appearance in Africa to the Portuguese, who traded on the Guinea Coast; we have noted its early and obscure history in Asia, and have seen how widely it is now acclimatised, and what a great part of the world is capable of producing crops of it; even in Central Europe this is possible.

Then, when the scarcity of olive oil demanded a substitute, France holding the chief trade in oil-seeds not only came forward as the market for ground-nuts, but her settlements obtained the export trade, and Gambia, Senegal, Pondicherry, and in a measure Algiers, prospered by it. Our neighbouring English possessions were not long in following suit, British Gambia gaining by proximity to the French settlements, and Madras profiting through Pondicherry. The rapid growth of the trade was most marked. At first West Africa supplied Europe, then nuts came from India, and even China and the Argentine, and now in addition there is an increasing importation from the Mozambique coast; the latter grows, while India withdraws from the competition.

Marseilles, from the first the chief market for ground-nuts in Europe, and still chief, despite the growing trade of Hamburg, London, Rotterdam and Genoa, is undergoing a crisis in its oil trade, and this, because of its connection with the decreased production of India (*see* p. 186), demands our attention.

Since 1894 the importations of oil-seeds by Marseilles have fallen; in 1897 41 per cent. (16 out of 39) of the oil mills of the city were closed, and the report for 1898 (*Compte Rendu de la situation commerciale*, p. 77) tells us that the condition of the oil trade was growing less hopeful. The difficulty of obtaining material (a result of local prices) and the flooding of the market with American cotton-seed oil are cited as causes. In fact the competition, not only in regard to cotton-seed oil, but in other oils, and with European ports, has proved too severe for Marseilles. Year after year the price offered for raw material has been reduced in order to meet the falling price of the oil. With other oil-seeds ground-nuts have fallen, and the price for unshelled nuts, which in 1877 stood at 49 francs per 100 kilogrammes, in 1898 stood at 30, and in 1895 had been as low as $22\frac{1}{2}$ (*Compte Rendu*, 1898, table at p. 81).

The decreasing interest of Madras, Bombay and Pondicherry is traceable in a large measure to these falling prices, and also

undoubtedly to the deterioration of the crops due to exhaustion of the soil. On p. 197 it was pointed out how crop after crop wears out the land. No wonder considering the richness of the material taken off in the harvest! As the farmers of Virginia have been forced to recognise, land which once yielded 50 bushels per acre presently grudgingly produces 20, and so too with the successive crops of the Indian ryot.

Freight has operated against the export trade of India. To save the considerable addition of bulk made by the husk the native has shelled his produce before shipping it, and that carelessly; fungi and bacteria thereupon commence their ravages on the broken kernels, producing deterioration which, measured by Marseilles prices, is expressed in the following table. It is calculated from data in the *Compte Rendu* for 1898, and by allowing that the husk removed takes 23 per cent. from the weight.

Prices at Marseilles in francs per 100 *kilograms.*

Year.	Undecorticated.	Estimated cost of 100 kilos of kernels in undecorticated nuts.	Decorticated.
1875...	31	40·3	38
1876...	31·5	40·9	40
1877...	34	44·2	49
1878...	33·5	43·5	42
1879...	33	42·9	39
1880...	36	46·8	39
1881...	33	42·9	34
1882...	32·5	42·2	31
1883...	35	45·5	32
1884...	33	42·9	33
1885...	25	32·5	33
1886...	22·5	29·2	26
1887...	25	32·5	28·5
1888...	27·5	35·7	28·5
1889...	25	32·5	28·5
1890...	25·5	33·1	27
1891...	27	35·1	28·5
1892...	26·5	34·4	28·5
1893...	22	28·6	27
1894...	17·5	22·7	22·5
1895...	18·5	24	22·5
1896...	18	23·4	26
1897...	22	28·6	30
1898...	22·5	29·2	30

The cake resulting from the expression of seed, much injured by fungi and bacteria is, like the oil, rancid, and if, as is probable, the fungi again assert themselves after expression, loses its valuable fatty constituents by degrees. "Ritthausen and Baumann have shown that a great loss is caused by fungi in other oil-cakes; *e.g.*, two samples of rape-seed cake containing 10·53 and 8·5 per cent. of oil, contained after two years only 1·98 and 1·87 per cent. when overrun by fungi." (Biffen in *Annals of Botany*, 1899, p. 372.)

Here lies the reason why cake from Indian seed is more or less condemned. It must be confessed that the product is not sent into the market in the best condition; and moreover the practice of increasing weight by adding water (p. 197) or of gathering the nuts by flooding the land (p. 197) or the storage which may be necessary between the shelling and shipment cannot but be detrimental.

Obviously, then, the sooner the crop finds its way into the oil-mill, the better the oil and the cake. The short voyage between Gambia or Senegal and European ports is greatly in favour of these countries; but the existence of oil mills in India, in China, and now at Chinde in the Zambesi delta, all places with an increasing output, indicates the possibility of the extension of crushing in the centres of production.

That there is a demand for the oil appears from statements to the effect that in the making of a firm hard soap other oils cannot readily replace it. As a table oil its use is wide, and one result of the large imports of cotton-seed oil into Europe has been to cause more of the Marseilles mills than hitherto to turn their attention in this direction. The big importation of undecorticated ground-nuts into Marseilles in 1898 (p. 187) while showing the demand, is probably an effect of this.

The Chamber of Commerce of Pondicherry aware of the decrease in their trade—for not only has the acreage under the crop diminished, but a greater percentage of the output of India has been diverted to other ports—has commenced to experiment by the introduction into India of new seed; and the Government of Madras is moving in the same direction. It has been noticed that fields sown with seed imported from the Mozambique coast have produced satisfactory results while neighbouring crops sown with Indian seed have been very poor. More experiments are needed; in the absence of any certain estimate of the relative values of different races it is impossible to foretell what the results will be.

I. HENRY BURKILL.

II.—MISCELLANEOUS NOTES.

MR. JOHN MAHON, formerly a member of the gardening staff of the Royal Botanic Gardens, and late Forester under the British Central Africa Protectorate (*Kew Bulletin*, 1897, p. 240), has been appointed, on the recommendation of Kew, by the Secretary of State for Foreign Affairs, Assistant Curator of the Botanic Station, Entebbe, Uganda.

MR. ALFRED EVANS, a member of the gardening staff of the Royal Botanic Gardens, has been appointed, on the recommendation of Kew, by the Secretary of State for the Colonies, Assistant Curator of the Botanic Station, Aburi, Gold Coast.

Mr. John Reader Jackson, A.L.S.—The retirement of one of the longest and best known members of the Kew staff must be recorded regretfully. The following sympathetic notice is taken from the *Pharmaceutical Journal* (October 12, 1901):—

"Mr. John Reader Jackson, A.L.S., who for the past forty-three years has been keeper of the Museums of Economic Botany, Royal Botanic Gardens, Kew, has now retired, on September 30, a well-known authority on economic botany being thus removed from official life. During his long period of service the Kew Museums have increased largely in usefulness and popularity. The splendid nucleus formed by the late Sir William Hooker in 1842 has been considerably augmented by products from each successive International Exhibition since its date, the last exhibition at Paris affording an immense addition to the unrivalled collections already stored at Kew. The museums are especially rich in the products of our Indian Empire, owing to the transference to Kew in 1879 of the whole of the vegetable products contained in the old Indian Museum. Mr. Jackson joined the Kew staff simultaneously with Professor D. Oliver, F.R.S., who retired from the position of Keeper of the Herbarium in 1890. During Mr. Jackson's period of service three directors and four curators of the gardens have held office. To those who have had occasion to consult Mr. Jackson officially he will long be remembered for his extreme courtesy and geniality. We understand that he has removed from Kew to South Devon, and it is hoped that he will continue to add to the numerous and instructive articles on economic botany which he has contributed to various publications. Mr. Jackson is succeeded by Mr. J. Masters Hillier, who has been assistant to Mr. Jackson for twenty-two years, and the vacancy caused by Mr. Hillier's promotion has been filled by the appointment of Mr. J. H. Holland, who recently retired from the service of the Southern Nigeria Protectorate, where he was Curator of the Botanic Station at Old Calabar."

Dr. Emil Bretschneider.—The death of this eminent Russian sinologist and botanist has already been mentioned in *Hooker's Icones Plantarum*, in the letterpress to plate 2708 (*Bretschneidera sinensis*, Hemsl.); but it is only since then that we have found some particulars of the earlier part of his active career. He was born at Riga in 1833, and died at St. Petersburg on May 12, 1901. After finishing his medical studies he was physician to the Russian Embassy at Teheran from 1862–65, when he went in the same capacity to Peking, where he remained until he was pensioned in 1884. Dr. Bretschneider's correspondence with Kew began about the year 1880, and he sent dried plants from time to time, including a good set of his herbarium from the mountains near Peking. The extent of this collection may be estimated from the frequency with which his name occurs in the *Index Floræ Sinensis*. But Dr. Bretschneider was more a man of letters and linguist than a practical botanist, and his researches embraced the botany, geography, archæology, &c., of China. The results were mostly published in English. Among his works specially

interesting to botanists and pharmacologists we may name: *On the Study and Value of Chinese Botanical Works*, 1870; *Early European Researches into the Flora of China*, 1881; *Botanicon Sinicum*, 1882; and *History of European Botanical Discoveries in China*, 1898. The last is a monumental, large octavo, work of 1,167 pages, with a map of China in four sheets—the best extant. This "History" is of the greatest value to botanists and horticulturists alike, as it contains very full particulars of collectors and their journeys, collections, living and dried, as well as of descriptions and illustrations, with place of publication. An interesting letter from Dr. Bretschneider relating to this publication appeared in the *Bulletin* for 1898, pp. 313–317.

Botanical Magazine for September.—*Epidendrum osmanthum* is a handsome species, with fragrant flowers which last about two months. The Kew plant was purchased from Messrs. Sander & Co., who introduced the species from Brazil. The exceedingly pretty *Iris Tauri*, bulbs of which were received from Mr. Siehe, of Mersina, is a native of alpine pastures in the Eastern Taurus, growing at elevations of 4,500 to 6,500 feet. It is allied to *I. stenophylla*, figured on plate 7734. *Oxalis dispar* is a new species from British Guiana, closely resembling *O. Laureolæ* and *O. Noronhæ*. Its flowers are golden yellow, and about an inch across. This plant also was procured from Messrs. Sander & Co. *Impatiens Thomsoni*, the commonest sub-alpine species of the genus in the Western Himalaya, was raised from seeds received from J. F. Duthie, Esq., B.A., F.L.S., in 1900. It is described as a very attractive plant, from the abundance of its rose-coloured flowers amongst the deep green foliage, followed by the red, drooping pods. *Arctotis Gumbletoni*, a beautiful new species from Namaqualand, was grown in the garden of W. E. Gumbleton, Esq., of Belgrove, Queenstown, Ireland. Its stout peduncles are from eight inches to a foot high, with flower-heads three inches in diameter.

Botanical Magazine for October.—*Exorrhiza wendlandiana* is a native of humid forests in the Fiji Islands, whence some living plants were sent to Kew in 1881 by the late Sir J. B. Thurston, K.C.M.G. The plant from which the drawing was made flowered in February of the current year. Its height to the top of the crown of large pinnatisect leaves is 24 feet. The supporting roots emitted from the base of the trunk are spinous. *Habenaria Lugardii* was recently discovered in the Botletle Valley, Ngamiland, by Major F. D. and Lieut. E. J. Lugard, who presented some tubers to Kew. It has two large orbicular leaves adpressed to the ground and racemes of numerous white flowers, of which the petals are divided to the base into two and the lip into three long slender segments. The very slender spur is five to six inches long. *Cineraria pentactina* is a climbing plant, having small semi-orbicular leaves and small yellow capitula. It has been

grown at Kew for many years, and its native country is believed to be South Africa. *Calorhabdos cauloptera* is a Chinese Scrophulariaceous herb with ovate-lanceolate leaves and terminal spike-like racemes of small red-purple flowers. Seeds of this plant were received from Dr. Henry in 1896. *Calorhabdos* is a small genus closely allied to *Veronica*, differing, among other characters, in having all the leaves alternate. *Rubus palmatus*, a native of Japan and China, is a climbing shrub with five- or six-lobed sharply-toothed leaves and white flowers, the petals of which are elliptic—an infrequent occurrence in the genus. The drawing was made from a plant obtained from Messrs. James Veitch & Sons in 1899.

Botanical Magazine for November.—*Musa oleracea*, from New Caledonia, is the only known species having an underground tuber, by which the plant may be propagated in the same way as the potato. The tubers are full of starch, and when cooked in various ways are used as food by the natives of New Caledonia. The introduction of this plant to Kew is due to Mr. W. Soutter, Superintendent of the Gardens of the Brisbane Acclimatization Society. *Senecio magnificus* is a tall, stout glabrous undershrub, with usually oblong-lanceolate toothed leaves and moderately large golden-yellow flower-heads. It is a mountain plant of Victoria and South Australia. Seeds were received from J. H. Maiden, Esq., F.L.S., Director of the Botanic Garden, Sydney, in 1899, and plants raised from them flowered in the Temperate House in October, 1900. *Liparis tricallosa* is a terrestrial orchid from the Malay Peninsula and the Sulu Archipelago. First discovered by Mr. F. W. Burbidge, it was introduced into cultivation by Mr. W. Bull, of Chelsea, in 1879. The specimen figured was presented to Kew, when in full flower, by the Right Honourable Joseph Chamberlain in June, 1900. *Trevoria Chloris* was discovered by Mr. F. C. Lehmann in moist woods on the western slope of the Andes of Colombia at elevations of 4,800 to 5,500 feet. The genus, which is allied to *Coryanthes*, is named in compliment to Sir Trevor Lawrence, Bart., who communicated the specimen from which the drawing was prepared. *Syringa oblata*, a native of North China, is very closely allied to *S. vulgaris*, and is probably, Professor Sargent says, only a geographical variety of that species. The Kew plant, which was obtained from Mr. Lemoine, of Nancy, flowered in the Temperate House in April of the present year.

Work at Jodrell Laboratory in 1901:—

Boodle, L. A.—Comparative Anatomy of *Hymenophyllaceae*, *Schizæaceæ*, and *Gleicheniaceae*, continued. Part 2. Anatomy of *Schizæaceæ* (Ann. Bot., Vol. XV., June, 1901). Part 3. Anatomy of *Gleicheniaceae*. (Ann. Bot., Vol. XV., December, 1901.)

On an anomalous leaf of *Anemia hirsuta*. (Ann. Bot. Vol. XV., December, 1901.)

Brown, H. T., and Escombe, F.—Assimilation of Carbon in Green Plants.

Butler, E. J.—Biology of *Pythium*.

Fritsch, F. E.—Systematic Position of *Plagiopteron*.
Anatomy of *Elaeocarpus*.
Algae of the Royal Botanic Gardens.

Hill, T. G.—Anatomy of Stem of *Dalbergia paniculata*. (Ann. Bot., Vol. XV., March, 1901.)

Massee, G.—Life-History of *Macrosporium Tomato*.
Sclerotia on Seeds of *Conium maculatum*.

Massee, G., and Salmon, E.—Researches on Coprophilous Fungi. (Ann. Bot., Vol. XV., June, 1901.)

Pearson, H. H. W.—Researches on Fibre-plants.

Scott, D. H.—Structure and Affinities of Fossil Plants from Palaeozoic Rocks. Part 4. On the Seed-like Fructification of *Lepidocarpon*, a genus of Lycopodiaceous Cones from the Carboniferous Formation. (Phil. Trans. B., Vol. 194, 1901.)
Primary Structure of certain Palaeozoic Stems with the *Dadoxylon* Type of Wood (communicated to Royal Society of Edinburgh).
On a primitive Type of Structure in *Calamites*. (Ann. Bot., Vol. XV., December, 1901.)

Worsdell, W. C.—Contributions to Comparative Anatomy of *Cycadaceae*. (Trans. Linn. Soc., 2nd Ser. Bot., Vol. VI., 1901.)
The Morphology of the 'Flowers' of *Cephalotaxus*. (Ann. Bot., Vol. XV., December, 1901.)
Vascular Structure of the 'Flowers' of the *Gnetaceae*. (Ann. Bot., Vol. XV., December, 1901.)

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ROYAL GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

APPENDIX I.—1901.

LIST OF SEEDS OF HARDY HERBACEOUS PLANTS AND OF TREES AND SHRUBS.

The following is a list of seeds of Hardy Herbaceous Annual and Perennial Plants and of Hardy Trees and Shrubs which, for the most part, have ripened at Kew during the year 1900. These seeds are not sold to the general public, but are available for exchange with Colonial, Indian, and Foreign Botanic Gardens, as well as with regular correspondents of Kew. No application, except from remote colonial possessions, can be entertained after the end of March.

HERBACEOUS PLANTS.

Acaena glabra, *J. Buch.*
macrostemon, *Hook. f.*
microphylla, *Hook. f.*
myriophylla, *Lindl.*
Novae-Zealandiae, *Kirk.*
ovalifolia, *Ruiz & Pav.*
Sanguisorbae, *Vahl.*
sarmentosa, *Carmich.*

Acanthus longifolius, *Poir.*

Achillea Ageratum, *L.*
decolorans, *Schrad.*
Gerberi, *Willd.*
leptophylla, *Bieb.*
ligustica, *All.*
macrophylla, *L.*
magna, *L.*
moschata, *Jacq.*
nobilis, *L.*
odorata, *L.*
Ptarmica, *L.*
rupestris, *Huter.*
Santolina, *L.*
sieheana, *Stapf.*
taygetea, *Boiss. & Heldr.*

Aconitum ferox, *Wall.*
— var. crassicaule.
heterophyllum, *Wall.*
Lycoctonum, *L.*
palmatum, *D. Don.*
reclinatum, *A. Gray.*

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Aconitum, *cont.*
Napellus, *L.*
uncinatum, *L.*

Actea spicata, *L.* var. arguta, *Torr.*

Actinomeris squarrosa, *Nutt.*

Adenophora stricta, *Miq.*

Adesmia muricata, *DC.*

Adonis aestivalis, *L.*
autumnalis, *L.*
pyrenaica, *DC.*

Aethionema cappadocicum, *Spreng.*
cordatum, *Boiss.*
coridifolium, *DC.*
grandiflorum, *Boiss.*
saxatile, *R. Br.*

Agrimonia Eupatoria, *L.*
leucantha, *Kunze.*
odorata, *Mill.*

Agropyron acutum, *Roem. & Schult.*
caninum, *Beauv.*
cristatum, *Guerin.*
dasyanthum, *Ledeb.*
desertorum, *Schult.*
repens, *Beauv.*
Richardsoni, *Schrad.*
tenerum, *Vasey.*
villosum, *Link.*

Agrostis alba, *L.*
nebulosa, *Boiss. & Reut.*
vulgaris, *With.*

Aira agrostidea, *Lois.*

Aizoon quadrifidum, *F. Muell.*

Ajuga reptans, *L.*

Alchemilla alpina, *L.*
arvensis, *Scop.*
conjuncta, *Bab.*
splendens, *Christ.*
vulgaris *L.*

Alisma Plantago, *L.*

Allium acuminatum, *Hook.*
angulosum, *L.*
atropurpureum, *Waldst. & Kit.*
Bidwilliæ, *S. Wats.*
cardiostemon, *Fisch. & Mey.*
carinatum, *L.*
Cydni, *Schott & Kotschy.*
fistulosum, *L.*
giganteum, *Regel.*
globosum, *Red.* var. albidum.
hirtifolium, *Boiss.*
hymenorrhizum, *Ledeb.*
karataviense, *Regel.*
Kesselringii, *Regel.*
margaritaceum, *Sibth. & Sm.*
montanum, *F. W. Schm.*
narcissiflorum, *Vill.*
nigrum, *L.*
nöeanum, *Reut.*
odorum, *L.*
oreophilum, *C. A. Mey.*
orientale, *Boiss.*
parciflorum, *Vis.*
platycaule, *S. Wats.*
polyphyllum, *Kar. & Kir.*
Porrum, *L.*
pulchellum, *D. Don.*
Schoenoprasum, *L.*
— var. sibiricum, (*L.*).
Schuberti, *Zucc.*
scorzoneræfolium, *Red.*
senescens, *L.*
sphaerocephalum, *L.*
stipitatum, *Regel.*
subvillosum, *Salzm.*
Suworowi, *Regel.*
triquetrum, *L.*
ursinum, *L.*

Alonsoa Warscewiczii, *Regel.*

Alopecurus geniculatus, *L.*
pratensis, *L.*

Alstroemeria aurea, *R. Grah.*

Althaea armeniaca, *Tenore.*
cannabina, *L.*
— var. narbonensis, *Pourr.*
ficifolia, *Cav.*
kurdica, *Schlecht.*
Ludwigii, *L.*
officinalis, *L.*
pallida, *Waldst. & Kit.*

Althaea, *cont.*
pontica, *Benth. & Hook. f.*
rosea, *Cav.*
sulphurea, *Boiss. & Hohen.*
taurinensis, *DC.*

Alyssum argenteum, *Vitm.*
corymbosum, *Boiss.*
creticum, *L.*
gemonense, *L.*
incanum, *L.*
maritimum, *Lam.*
minimum, *Willd.*
podolicum, *Bess.*
pyrenaicum, *Lap.*
rostratum, *Stev.*
saxatile, *L.*
Wierzbickii, *Heuffl.*

Amaranthus caudatus, *L.*
hypochondriacus, *L.*
polygamus, *L.*
retroflexus, *L.*
speciosus, *Sims.*

Amethystea caerulea, *L.*

Ammi majus, *L.*

Ammobium alatum, *R. Br.*

Ammophila arundinacea, *Host.*

Amsonia Tabernaemontana, *Walt.*

Anacyclus Pyrethrum, *DC.*
radiatus, *Loisel.*

Anagallis arvensis, *L.*
linifolia, *L.*

Anaphalis nubigena, *DC.*

Anastatica hierochuntica, *L.*

Anchusa italica, *Retz.*
officinalis, *L.*

Andropogon cirratus, *Hack.*
provincialis, *Lam.*

Androsace filiformis, *Retz.*
lactiflora, *Fisch.*

Andryala varia, *Lowe.* var. aprica.

Anemone alpina, *L.*
blanda, *Schott. & Kotsch.*
Halleri, *All.*

Anemone, *cont.*
Hepatica, *L.*
hortensis, *L.*
narcissiflora, *L.*
nemorosa, *L.*
parviflora, *Michx.*
pennsylvanica, *L.*
rivularis, *Buch-Ham.*
sulphurea, *L.*
sylvestris, *L.*
virginiana, *L.*
vitifolia, *Buchan.*

Anoda hastata, *Cav.*
Wrightii, *A. Gray.*

Antennaria dioica, *Gaertn.* var. tomentosa, *Hort.*

Anthemis aetnensis, *Schouw.*
arvensis, *L.*
Cotula, *L.*
cupaniana, *Tod.*
nobilis, *L.*
— var. discoidalis, *Hort.*
styriaca, *Vest.*
tinctoria, *L.*

Anthericum Liliago, *L.*
— var. algeriense, *B. & R.*
ramosum, *L.*

Anthoxanthum odoratum, *L.*
Puelii, *Lecoq. & Lamotte.*

Anthriscus sylvestris, *Hoffm.*

Anthyllis sericea, *Lag.*
Vulneraria, *L.*

Antirrhinum Asarina, *L.*
majus, *L.*
Orontium, *L.*

Apera interrupta, *Beauv.*
Spica-venti, *Beauv.*

Aplopappus rubiginosus, *Torr. & Gray.*

Aquilegia canadensis, *L.*
chrysantha, *A. Gray.*
caerulea, *James.*
einseliana, *F. Schultz.*
— var. Bertolonii, (*Schott*).
formosa, *Fisch.*
glandulosa, *Fisch.*
— var. jucunda, *Fisch. & Lallem.*

Aquilegia, *cont.*
olympica, *Boiss.*
thalictrifolia, *Schott & Kotschy.*
vulgaris, *L.*
— var. atrata, (*Koch*).

Arabis albida, *Stev.*
alpina, *L.*
arenosa, *Scop.*
bellidifolia, *L.*
hirsuta, *Scop.*
Holboellii, *Hornem.*
pumila, *Jacq.*
Stelleri, *DC.* var. japonica.

Aralia cachemirica, *Decne.*
cordata, *Thunb.*
racemosa, *L.*

Archangelica littoralis, *Agardh.*
officinalis, *Hoffm.*

Arctium majus, *Bernh.*
minus, *Bernh.*

Arenaria aretioides, *Portenschl.*
balearica, *L.*
Bauhinorum, *Benth. & Hook. f.*
capillaris, *Poir.*
fasciculata, *Gouan.*
gothica, *Fries.*
graminifolia, *Schrad.*
— var. multiflora.
gypsophiloides, *L.*
laricifolia, *L.*
pinifolia, *Bieb.*
serpyllifolia, *L.*

Argemone grandiflora, *Sweet.*
hispida, *A. Gray.*
mexicana, *L.*

Arisarum proboscideum, *Savi.*

Armeria argyrocephala, *Wallr.*
berlingensis, *Daveau.*
majellensis, *Boiss.*
plantaginea, *Willd.*
pungens, *Hoffmgg. & Lk.*
Welwitschii, *Boiss.*

Arnica longifolia, *Eaton.*
montana, *L.*
sachalinensis, *A. Gray.*

Arnoseris pusilla, *Gaertn.*

Artemisia Absinthium, *L.*
annua, *L.*
campestris, *L.*
camphorata, *Vill.*
dracunculoides, *Pursh.*
lanata, *Willd.*
ludoviciana, *Nutt.*
paniculata, *Lam.*
parviflora, *Buch-Ham.*
pectinata, *Pall.*
rupestris, *L.*
scoparia, *Waldst. & Kit.*
sieversiana, *Ehrh.*

Arum italicum, *Mill.*

Asarum europaeum, *L.*
Hartwegii, *S. Wats.*

Asparagus officinalis, *L.*

Asperella Hystrix, *Willd.*

Asperula azurea, *Jaub. & Spach.*
cynanchica, *L.*
galioides, *Bieb.*
longiflora, *Waldst. & Kit.*
taurina, *L.*
tinctoria, *L.*

Asphodeline liburnica, *Reichb.*
lutea, *Reichb.*

Asphodelus albus, *Willd.*
fistulosus, *L.*
ramosus, *L.*

Aster alpinus, *L.*
acris, *L.* var. punctata.
acuminatus, *Michx.*
altaicus, *Willd.*
Amellus, *L.*
angustus, *Torr. & Gray.*
corymbosus, *Ait.*
dahuricus, *Benth.*
Herveyi, *A. Gray.*
laevis, *L.*
lindleyanus, *Torr. & Gray.*
longifolius, *Lam.*
macrophyllus, *L.*
nanshanicus, *Winkl.*
Porteri, *A. Gray.*
ptarmicoides, *Torr. & Gray.*
puniceus, *L.*
— var. lucidulus, *A. Gray.*

Aster, *cont.*
pyrenaeus, *DC.*
Radula, *Ait.*
scaber, *Thunb.*
Shortii, *Lindl.*
sibiricus, *L.*
spectabilis, *Ait.*
tanacetifolius, *H. B. & K.*
tardiflorus, *L.*
trinervis, *Desf.*
Tripolium, *L.*
umbellatus, *Mill.*
Vahlii, *Hook. & Arn.*

Asterolinum stellatum, *Hoffmgg. & Lk.*

Astilbe rivularis, *Buch-Ham.*
Thunbergii, *Miq.*

Astragalus alopecuroides, *L.*
alpinus, *L.*
boeticus, *L.*
caryocarpus, *Ker-Gawl.*
chinensis, *L.*
chlorostachys, *Lindl.*
Cicer, *L.*
danicus, *Retz.*
frigidus, *A. Gray.*
glycyphyllus, *L.*
kahiricus, *DC.*
maximus, *Willd.*
pentaglottis, *L.*
ponticus, *Pall.*
tomentosus, *Lam.*
xiphocarpus, *Benth.*

Astrantia Biebersteinii, *Fisch. & Mey.*
major, *L.*
—var. carinthiaca, (*Hoppe*).

Astrebla pectinata, *F. Muell.*
triticoides, *F. Muell.*

Athamanta Matthioli, *Wulf.*

Atriplex hastata, *L.*
hortensis, *L.*
littoralis, *L.*
rosea, *L.*
sibirica, *L.*

Atropa Belladonna, *L.*
— var. acuminata, (*Royle*).

Aubrietia deltoidea, *DC.*
erubescens, *Griseb.*
Pinardi, *Boiss.*

Avena pratensis, *L.*
strigosa, *Schreb.*

Baeria coronaria, *A. Gray.*
gracilis, *A. Gray.*

Ballota hispanica, *Benth.*

Baptisia australis, *R. Br.*

Barbarea intermedia, *Bor.*
praecox, *R. Br.*
vulgaris, *R. Br.*

Basella rubra, *L.*

Beckmannia erucaeformis, *Host.*

Berkheya Adlami, *Hook. f.*
„ purpurea, *Benth. & Hook. f.*

Beta maritima, *L.*
trigyna, *Waldst. & Kit.*

Bidens cernua, *L.*
grandiflora, *Balb.*
leucantha, *Willd.*
tripartita, *L.*

Biscutella auriculata, *L.*
ciliata, *DC.*
didyma, *L.*

Bloomeria aurea, *Kellogg.*

Blumenbachia insignis, *Schrad.*

Bocconia cordata, *Willd.*
microcarpa, *Maxim.*

Boltonia asteroides, *L'Hérit.*
incisa, *Benth.*
indica, *Benth.*

Borago officinalis, *L.*

Bouteloua oligostachya, *Torr.*

Brachycome iberidifolia, *Benth.*

Brachypodium distachyum. *Beauv.*
pinnatum, *Beauv.*
sylvaticum, *R. & S*

Brassica campestris, *L.*
— var. chinensis, (*L.*).
— var. glauca.
Cheiranthos, *Vill.*
Erucastrum, *L.*
juncea, *Coss.*
nigra, *Koch.*
oleracea, *L.*

Brevoortia Ida-Maia, *Wood.*

Briza media, *L.*

Brodiaea Bridgesii, *S. Wats.*
capitata, *Benth.*
californica, *Lindl.*
grandiflora, *Smith.*
Hendersoni, *S. Wats.*
ixioides, *S. Wats.*
lactea, *S. Wats.*
multiflora, *Benth.*
uniflora, *Baker.*

Bromus adoënsis, *Hochst.*
breviaristatus, *Buckl.*
brizaeformis, *Fisch. & Mey*
carinatus, *Hook. & Arn.*
ciliatus, *L.*
erectus, *Huds.*
inermis, *Leyss.*
Kalmii, *A. Gray.*
macrostachys, *Desf*
madritensis, *L.*
maximus, *Desf.*
mollis, *L.*
racemosus, *L.*
rubens, *L.*
sterilis, *L.*
Tacna, *Steud.*
tectorum, *L.*
unioloides, *H. B. & K.*

Browallia viscosa, *H. B & K*

Bryonia dioica, *Jacq*

Bulbine annua, *Willd.*

Bulbinella Hookeri, *Benth. & Hook. f.*
— var. latifolia.

Bunias Erucago, *L.*
orientalis, *L.*

Buphthalmum salicifolium, *L.*
speciosum, *Schreb.*

Bupleurum aristatum, *Bartl.*
aureum, *Fisch.*
Candollei, *Wall.*
gracile, *DC.*
protractum, *Hoffmgg. & Lk.*
rotundifolium, *L.*
stellatum, *L.*

Butomus umbellatus, *L.*

Caccinia strigosa, *Boiss.*

Cakile maritima, *Scop.*

Calamagrostis confinis, *Nutt.*
epigeios, *Roth.*
varia, *Beauv.*

Calamintha Acinos, *Clairv.*
alpina, *Lam.*
Clinopodium, *Benth.*
grandiflora, *Moench.*
officinalis, *Moench.*

Calandrinia grandiflora, *Lindl.*
Menziesii, *Torr. & Gray.*
pilosiuscula, *DC.*

Calceolaria mexicana, *Benth.*

Calendula arvensis, *L.*
microphylla, *Lange.*
nöeana, *Boiss.*
officinalis, *L.*
suffruticosa, *Vahl.*

Callirhöe pedata, *A. Gray.*

Callistephus hortensis, *Cass.*

Calotis cuneifolia, *R. Br.*

Caltha biflora, *DC.*
polypetala, *Hochst.*

Calystegia silvatica, *Choisy.*

Camassia Cusickii, *S. Wats.*
esculenta, *Lindl.*
Fraseri, *Torr.*
Leichtlini, *S. Wats.*

Camelina sativa, *Crantz.*

Campanula alliariaefolia, *Willd.*
barbata, *L.*
bononiensis, *L.*
carpatica, *Jacq.*
— var. pelviformis, *Hort.*
cervicaria, *L.*

Campanula, *cont.*
collina, *Bieb.*
colorata, *Wall.*
drabaefolia, *Sibth. & Sm.*
Erinus, *L.*
glomerata, *L.*
— var. dahurica.
lactiflora, *Bieb.*
latifolia, *L.*
— var. macrantha, (*Fisch.*).
— var. versicolor, (*Sibth. & Sm.*).
Medium, *L.*
persicifolia, *L.*
pusilla, *Haenke.*
pyramidalis, *L.*
ramosissima, *Sibth. & Sm.*
rapunculoides, *L.*
reuteriana, *Boiss. & Bal.*
rotundifolia, *L.*
sarmatica, *Ker.*
Scheuchzeri, *Vill.*
sibirica, *L.*
— var. divergens, (*Willd.*).
spicata, *L.*
Steveni, *Bieb.*
thyrsoides, *L.*
Trachelium, *L.*

Cannabis sativa, *L.*

Carbenia benedicta, *Adans.*

Cardamine carnosa, *Waldst. & Kit.*
chenopodifolia, *Pers.*
Impatiens, *L.*

Carduus crispus, *L.*
defloratus, *L.*
niveus, *Benth.*
nutans, *L.*
pycnocephalus, *Jacq.*
stenolepis, *Benth.*

Carex alopecoidea, *Tuckerm.*
aquatilis, *Wahlnb.*
axillaris, *Good.*
binervis, *Sm.*
crinita, *Lam.*
decomposita, *Muhl.*
depauperata, *Good.*
divulsa, *Good.*
flava, *L.*
— var. lepidocarpa, (*Tausch*).

Carex, *cont.*
— var. Oederi, (*Ehrh.*).
fusca, *All.*
Grayii, *Carey.*
grisea, *Wahlenb.*
hirta, *L.*
hordeistichos, *Vill.*
leporina, *L.*
longirostris, *Torr.*
Novae-Selandiae, *Boeck.*
paniculata, *L.*
remota, *L.*
sparganioides, *Muhl.*
stellulata, *Good.*
straminea, *Willd.*
strigosa, *Huds.*
sylvatica, *Huds.*
tenella, *Schkuhr.*
teretiuscula, *Good.*
testacea, *Sol.* var. attenuata.
tomentosa, *L.*
tribuloides, *Wahlenb.*
Vilmorini, *Mottet.*
vulpina, *L.*
vulpinoidea, *Michx.*

Carlina acanthifolia, *All.*
acaulis, *L.*

Carthamus flavescens, *Willd.*
lanatus, *L.*
tinctorius, *L.*

Carum buriaticum, *Turcz.*
Carvi, *L.*
copticum, *Benth. & Hook. f.*
Petroselinum, *Benth. & Hook. f.*

Catabrosa aquatica, *Beauv.*

Catananche caerulea, *L.*
lutea, *L.*

Cedronella mexicana, *Benth.* var. cana, *Hook.*

Celsia betonicaefolia, *Desf.*
Daenzeri, *Fauché & Chaub.*
heterophylla, *Desf.*
orientalis, *L.*
pontica, *Boiss.*

Cenchrus tribuloides, *L.*

Cenia turbinata, *Pers.*

Centaurea americana, *Nutt.*
Cineraria, *L.*
Clementei, *Boiss.*
Crocodylium, *L.*
Cyanus, *L.*
cynaroides, *Link.*
dealbata, *Willd.*
diluta, *Dryand.*
eriophora, *L.*
Fontanesii, *Spach.*
iberica, *Trev.*
Jacea, *L.*
lugdunensis, *Jord.*
melitensis, *L.*
montana, *L.*
nigra, *L.*
nigrescens, *Willd.*
—var. vochinensis (*Bernh.*).
pulchra, *DC.*
ruthenica, *Lam.*
salmantica, *L.*
Scabiosa, *L.*
— var. oliveriana, *DC.*
valesiaca, *Jord.*
Verutum, *L.*

Centranthus Calcitrapa, *Dufr.*
macrosiphon, *Boiss.*
ruber, *DC.*

Cephalaria alpina, *Schrad.*
leucantha, *Schrad.*
radiata, *Griseb. & Schenk.*
syriaca, *Schrad.*
tatarica, *Schrad.*
transsylvanica, *L.*

Cerastium alpinum, *L.* var. lanatum, (*Lam.*).
arvense, *L.*
Boissieri, *Gren.*
macranthum, *Boiss.*
perfoliatum, *L.*
purpurascens, *Adams.*
tomentosum, *L.*

Cerinthe alpina, *Kit.*
major, *L.*
retorta, *Sibth. & Sm.*

Chaenostoma foetidum, *Benth.*

Chaerophyllum aromaticum, *L.*
aureum, *L.*
nodosum, *Crantz.*

Charieis heterophylla, *Cass.*

Cheiranthus Cheiri, *L.*

Chelidonium franchetianum, *Prain.*
majus, *L.*
— var. laciniatum.

Chelone Lyoni, *Pursh.*
nemorosa, *Dougl.*

Chenopodium ambrosoides, *L.*
Bonus-Henricus, *L.*
Botrys, *L.*
ficifolium, *Sm.*
foetidum, *Schrad.*
graveolens, *Willd.*
polyspermum. *L.*
Quinoa, *Willd.*
urbicum, *L.*
virgatum, *Thunb.*
Vulvaria, *L.*

Chionodoxa Luciliae, *Boiss.*
— var. sardensis.

Chlora perfoliata, *L.*

Chlorogalum pomeridianum, *Kunth.*

Chorispora tenella, *DC.*

Chrysanthemum anserinaefolium, *Haussk. & Bornm.*
Balsamita, *L.*
carinatum, *Schousb.*
carneum, *Steud.*
caucasicum, *Pers.*
cinerariaefolium, *Vis.*
coronarium, *L.*
corymbosum, *L.*
lacustre, *Brot.*
macrophyllum, *Waldst. & Kit.*
multicaule, *Desf.*
Myconis, *L.*
pallens, *J. Gay.*
Parthenium, *Bernh.*
segetum, *L.*
setabense, *Dufour.*
uliginosum, *Pers.*
viscosum, *Desf.*

Chrysopogon Gryllus, *Trin.*

Cicer arietinum, *L.*

Cichorium Intybus, *L.*

Cicuta virosa, *L.*

Cimicifuga cordifolia, *Pursh.*
racemosa, *Nutt.*

Circaea lutetiana, *L.*

Cladium Mariscus, *Br.*

Clarkia elegans, *Dougl.*
pulchella, *Pursh.*
rhomboidea, *Dougl.*

Claytonia perfoliata, *Donn.*
sibirica, *L.*

Clematis recta, *L.*
integrifolia, *L.*

Cleome violacea, *L.*

Cleonia lusitanica, *L.*

Clintonia borealis, *Rafin.*
umbellata, *Torr.*
uniflora, *Kunth.*

Clypeola cyclodontea, *Delile.*

Cnicus Acarna, *L.*
arachnoideus, *Bieb.*
canus, *Roth.*
conspicuus. *Hemsl.*
Diacantha, *Desf.*
eriophorus, *Roth.*
lanceolatus, *Willd.*
ligularis, *Hort. Kew.*
ochroleucus, *Spreng.*
oleraceus, *L.*
serrulatus, *Bieb.*
spathulatus, (*Moretti*).
syriacus, *Roth.*
tataricus, *Willd.*

Cnidium serbicum, *Janka.*

Cochlearia alpina, *Wats.*
danica, *L.*
glastifolia, *L.*

Codonopsis rotundifolia, *Royle.*
viridiflora, *Maxim.*

Coix Lacryma-Jobi, *L.*

Collinsia bartsiaefolia, *Benth.*
bicolor, *Benth.*
grandiflora, *Dougl.*
Parryi, *A. Gray.*
sparsiflora, *Fisch. & Mey.*
Torreyi, *A. Gray.*
verna, *Nutt.*

Collomia coccinea, *Lehm.*
gilioides, *Benth.*
grandiflora, *Dougl.*
linearis, *Nutt.*

Conium maculatum, *L.*

Conringia orientalis, *Dum.*

Convolvulus californicus, *Choisy.*
siculus, *L.*
tricolor, *L.*
undulatus, *Cav.*

Coreopsis abyssinica, *Sch. Bip.*
auriculata, *L.*
Drummondi, *Torr. & Gray.*
grandiflora, *Nutt.*
senifolia, *Michx.*
tinctoria, *Nutt.*

Coriandrum sativum, *L.*

Corispermum hyssopifolium, *L.*

Cornucopiae cucullatum, *L*

Coronilla coronata, *L.*
cretica, *L.*
elegans, *Panč.*
scorpioides, *Koch.*
vaginalis, *Lam.*
varia, *L.*

Corrigiola littoralis, *L.*

Corydalis capnoides, *Wahlenb.*
claviculata, *DC.*
glauca, *Pursh.*
lutea, *DC.*
racemosa, *Pers.*

Corynephorus canescens, *Beauv.*

Cosmos bipinnatus, *Cav.*

Cotula coronopifolia, *L.*

Cousinia Hystrix, *C. A. Mey.*

Crambe cordifolia, *Stev.*
hispanica, *L.*
maritima, *L.*
orientale, *L.*
pinnatifida, *R. Br.*

Crassula glomerata, *Bery.*

Crepis alpina, *L.*
blattarioides, *Vill.*
Candollei, *Sch. Bip.*
foetida, *L.*
paludosa, *Moench.*
rubra, *L.*
setosa, *Hall. f.*
sibirica, *L.*
taraxacifolia, *Thuill.*
virens, *L.*

Crithmum maritimum, *L.*

Crocus asturicus, *Herb.*
Balansae, *F. Gay.*
biflorus, *Mill.*
cancellatus, *Herb.* var. cilicicus, *Maw.*
chrysanthus, *Herb.*
dalmaticus, *Vis.*
hadriaticus, *Herb.*
— var. chrysobelonicus, *Herb.*
longiflorus, *Rafin.*
Malyi, *Vis.*
nudiflorus, *Sm.*
pulchellus, *Herb.*
Sieberi, *Gay.*
susianus, *Ker-Gawl.*
tommasinianus, *Herb.*
vernus, *All.*
zonatus, *Gay.*

Crucianella aegyptiaca, *L.*

Crupina vulgaris, *Cass.*

Cryptostemma calendulaceum, *R.Br.*

Cucubalus bacciferus, *L.*

Cucurbita Pepo, *L.*

Cuminum Cyminum, *L.*

Cuphea lanceolata, *Ait.*
Llavea, *Lindl.*
procumbens, *Cav.*
Zimapani, *Morr.*

Cuscuta Epilinum, *Weihe.*

Cyclamen neapolitanum, *Tenore.*

Cynara Cardunculus, *L.*

Cypripedium spectabile, *Salisb.*

Cynoglossum furcatum, *Wall.*
officinale, *L.*
petiolatum, *A. DC.*

Cynosurus cristatus, *L.*
echinatus, *L.*

Cyperus longus, *L.*
rotundus, *L.*
vegetus, *Willd.*

Dactylis glomerata, *L.*

Dahlia coccinea, *Cav.*
scapigera, *Knowles & Westcott.*

Dalea Lagopus, *Willd.*

Datisca cannabina, *L.*

Datura Stramonium, *L.*
Tatula, *L.*

Daucus Carota, *L.*
gummifer, *Lam.*
setulosus, *Guss.*

Delphinium Ajacis, *Reichb.*
brunonianum, *Royle.*
cashmirianum, *Royle.*
caucasicum, *C. A. Mey.*
decorum, *Fisch. & Mey.*
dictyocarpum, *DC.*
elatum, *L.*
grandiflorum, *L.*
hybridum, *Steph.*
maackianum, *Regel.*
orientale, *J. Gay.*
palmatifidum, *DC.*
pictum, *Willd.*
Requienii, *DC.*
speciosum, *Bieb.*
— var. turkestanicum.
Staphisagria, *L.*
tatsienense, *Franch.*

Demazeria loliaçea, *Nym.*
sicula, *Dum.*

Deschampsia caespitosa, *Beauv.*

Desmodium canadense, *DC.*

Dianthus arenarius, *L.*
Armeria, *L.*
atrorubens, *All.*
caesius, *Sm.*
chinensis, *L.*
ciliatus, *Guss.*
cruentus, *Griseb.*
furcatus, *Balb.*
giganteus, *Torr.*
hirtus, *Vill.*
monspessulanus, *L.*
neglectus, *Lois.*
noeanus, *Boiss.*
petraeus, *Waldst. & Kit.*
pinifolius, *Sibth. & Sm.*
plumarius, *L.*
— var. serotinus, *Waldst. & Kit.*
pungens, *L.*
Requienii, *Gren. & Godr.*
Seguieri, *Vill.*
squarrosus, *Bieb.*
superbus, *L.*
sylvestris, *Wulf.*
tener, *Balb.*
Waldsteinii, *Sternb.*

Diarrhena americana, *Beauv.*

Dicentra eximia, *Torr.*

Dictamnus albus, *L.*

Digitalis ambigua, *Murr.*
lutea, *L.*
media, *Roth.*
purpurea, *L.*
Thapsi, *L.*

Dimorphotheca annua, *Less.*
hybrida, *DC.*
pluvialis, *Moench.*

Diotis candidissima, *Desf.*

Dipcadi serotinum, *Medic.*

Diplotaxis tenuifolia, *DC.*

Dispacus asper, *Wall.*
ferox, *Loisel.*
laciniatus, *L.*
plumosus, *Franch.*
sylvestris, *Mill.*

Dischisma spicatum, *Chois.*

Doronicum scorpioides, *Lam.*

Dorycnium herbaceum, *Vill.*
rectum, *Ser.*

Downingia elegans, *Torr.*
pulchella, *Torr.*

Draba aizoides, *L.*
Aizoon, *Wahlenb.*
alpina, *L.*
altaica, *Led.*
aurea, *Vahl.*
hirta, *L.*
incana, *L.*
muralis, *L.*
stellata, *Jacq.*
tomentosa, *Wahlenb.*
— var. frigida, *Nym.*

Dracocephalum Moldavica, *L.*
parviflorum, *Nutt.*
peregrinum, *L.*

Dryas octopetala, *L.*

Drymaria cordata, *Willd.*

Drypis spinosa, *L.*

Dulichium spathaceum, *Richards.*

Ecballium Elaterium, *A. Rich.*

Eccremocarpus scaber, *Ruiz & Pav.*

Echinaria capitata, *Desf.*

Echinodorus ranunculoides, *Engelm.*

Echinops bannaticus, *Rochel.*
globifer, *Janka.*
microcephalus, *Sibth. & Sm.*
niveus, *Wall.*
sphaerocephalus, *L.*
— var. albidus, (*Boiss. & Sprun.*).

Echium rosulatum, *Lange.*
vulgare, *L.*

Eleusine coracana, *Gaertn.*
aegyptiaca, *Desf.*
stricta, *Roxb.*

Elsholtzia cristata, *Willd.*

Elymus arenarius, *L.*
canadensis, *L.*
dasystachya, *J. & C. Presl.*
giganteus, *Vahl.*
sibiricus, *L.*
virginicus, *L.*

Emilia flammea, *Cass.*

Enarthrocarpus lyratus, *DC.*

Encelia calva, *A. Gray.*

Epilobium alpinum, *L.*
angustifolium, *L.*
billardierianum, *Ser.*
Dodonaei, *Vill.*
glabellum, *Forst.*
hirsutum, *L.*
Lamyi, *Schultz.*
linnaeoides, *Hook. f.*
luteum, *Pursh.*
melanocaulon, *Hook.*
montanum, *L.*
nummularifolium, *A. Cunn.*
roseum, *Schreb.*
rosmarinifolium, *Haenke.*
tetragonum, *L.*

Epipactis palustris, *L.*

Eragrostis Brownei, *Nees.*
minor, *Host.*
pectinacea, *Nees.*
Purshii, *Schrad.*

Eranthis hyemalis, *Salisb.*

Eremostachys laciniata, *Bunge.*

Eremurus altaicus, *Stev.*
spectabilis, *Bieb.*

Erigeron alpinus, *L.*
aurantiacus, *Regel.*
bellidifolius, *Muhl.*
compositus, *Pursh.*

Erigeron, *cont.*
glabellus, *Nutt.*
— var. asper.
macranthus, *Nutt.*
mucronatus, *DC.*
multiradiatus, *Benth. & Hook. f.*
strigosus, *Muhl.*
uniflorus, *L.*

Erinus alpinus, *L.*

Eriophorum vaginatum, *L.*

Eriophyllum confertiflorum, *A. Gray.*

Erodium chium, *Willd.*
ciconium, *Willd.*
cicutarium, *L'Hérit.*
gruinum, *Soland.*
hymenodes, *L'Hérit.*
macradenum, *L'Hérit.*
malacoides, *Willd.*
Manescavi, *Coss.*
moschatum, *L'Herit.*
Semenowi, *Regel.*
tmoleum, *Reut.*
trichomanefolium, *L'Herit.*

Eruca sativa, *Mill.*

Eryngium alpinum, *L.*
amethystinum, *L.*
Bourgati, *Gouan.*
bromeliaefolium, *Delar.*
campestre, *L.*
dichotomum, *Desf.*
ebracteatum, *Lam.*
giganteum, *Bieb.*
maritimum, *L.*
oliverianum, *Delar.*
paniculatum, *Cav. & Dombey.*
planum, *L.*
Serra, *Cham. & Schlecht.*
spinalba, *Vill.*
Vaseyi, *Coult. & Rose.*
vesiculosum, *Labill.*

Erysimum asperum, *DC.*
— var. arkansanum, *A. Gray.*
boryanum, *Boiss.*
hieracifolium, *L.*
perowskianum, *Fisch. & Mey.*

Erythraea Centaurium, *Pers.*
linariifolia, *Pers.*
ramosissima, *Pers.*

Eschscholzia californica, *Cham.*
glauca, *Greene.*
tenuifolia, *Benth.*

Eucharidium Breweri, *A. Gray.*
concinnum, *Fisch. & Mey.*

Eupatorium ageratoides, *L.*
cannabinum, *L.*
purpureum, *L.*

Euphorbia altissima, *Boiss.*
coralloides, *L.*
dentata, *Michx.*
Esula, *L.*
exigua, *L.*
Lagascae, *Spreng.*
Lathyris, *L.*
Myrsinites, *L.*
Peplus, *L.*
pilosa, *L.*
platyphyllos, *L.*
portlandica, *L.*
segetalis, *L.*
tinctoria, *Boiss. & Huet.*
virgata, *Waldst. & Kit.*

Fagonia cretica, *L.*

Fagopyrum esculentum, *Moench.*

Fedia Cornucopiae, *Gaertn.*

Felicia abyssinica, *Sch. Bip.*
fragilis, *Cass.*

Ferula communis, *L.*
Ferulago, *L.*
glauca, *L.*
jaeschkeana, *Vatke.*
nodiflora, *L.*
syriaca, *Hort.*
tingitana, *L.*

Festuca arundinacea, *Vill.*
bromoides, *L.*
capillifolia, *Dufour.*
duriuscula, *L.*
elatior, *L.*
— var. pratensis, (*Huds.*).
Eskia, *Ram.*

Festuca, *cont.*
gigantea, *Vill.*
heterophylla, *Lam.*
Myuros, *L.*
Poa, *Kunth.*
rigida, *Kunth.*
scoparia, *Kern.*
unilaterale, *Schrad.*

Foeniculum vulgare, *Mill.*

Fragaria indica, *Andr.*

Fritillaria acmopetala, *Boiss.*
armena, *Boiss.*
aurea, *Schott.*
delphinensis, *Gren.* var. Moggridgei, *Boiss.*
imperialis, *L.*
Meleagris, *L.*
pluriflora, *Torr.*
tenella, *Bieb.*
— var. orsiniana, *Parl.*

Fumaria capreolata, *L.*
officinalis, *L.*
Vaillantii, *Loisel.* var. Laggeri.

Funkia caerulea, *Sweet.*
ovata, *Spreng.*
sieboldiana, *Hook.*

Gaillardia aristata, *Pursh.*
lanceolata, *Michaux.*
pulchella, *Foug.*

Galanthus Elwesii, *Hook. f.*
nivalis, *L.*

Galega officinalis, *L.*
orientalis, *Lam.*

Galeopsis ochroleuca, *Lam.*
pyrenaica, *Bartl.*

Galinsoga brachystephana, *Regel.*
parviflora, *Cav.*

Galium Aparine, *L.*
boreale, *L.*
Mollugo, *L.*
recurvum, *Req.*
tenuissimum, *Bieb.*
tricorne, *Stokes.*

Gastridium australe, *Beauv.*

Gaudinia fragilis, *Beauv.*

Gaura Lindheimeri, *Engelm. & Gray.*
parviflora, *Dougl.*

Gentiana Andrewsii, *Griseb.*
asclepiadea, *L.*
cruciata, *L.*
decumbens, *L.*
lutea, *L.*
septemfida, *Pall.*
tibetica, *King.*

Geranium albanum, *Bieb.*
anemonaefolium, *L'Hérit.*
armenum, *Boiss.*
bohemicum, *L.*
collinum, *Steph.*
Endressi, *Gay.*
incisum, *Nutt.*
lucidum, *L.*
palustre, *L.*
pratense, *L.*
pusillum, *Burm. f.*
Richardsoni, *Fisch. & Trautv.*
rivulare, *Vill.*
robertianum, *L.*
rotundifolium, *L.*
sanguineum, *L.*
— var. lancastriense, (*Mill.*).
sylvaticum, *L.*
Wilfordi, *Maxim.*

Gerbera kunzeana, *A. Br. & Asch.*

Geum chiloense, *Balb.*
coccineum, *Sibth. & Sm.*
macrophyllum, *Willd.*
montanum, *L.*
parviflorum, *Sm.*
pyrenaicum, *Mill.*
rivale, *L.*
strictum, *Ait.*
urbanum, *L.*

Gilia achilleaefolia, *Benth.*
androsacea, *Steud*
capitata, *Sims.*
densiflora, *Benth.*
dianthoides, *Endl.*
laciniata, *Ruiz & Pav.*
liniflora, *Benth.*
micrantha, *Steud.*
multicaulis, *Benth.*
squarrosa, *Hook. & Arn.*
tricolor, *Benth.*

Gillenia trifoliata, *Moench.*

Gladiolus illyricus, *Koch.*

Glaucium corniculatum, *Curt.*
flavum, *Crantz.* var. fulvum, (*Sm.*)
leptopodum, *Maxim.*

Glyceria distans, *Wahlenb.*

Glycine Soja, *Sieb. & Zucc.*

Glycyrrhiza echinata, *L.*
foetida, *Desf.*
lepidota, *Pursh.*

Gnaphalium indicum, *L.*
luteo-album, *L.*

Gratiola officinalis, *L.*

Grindelia inuloides, *Willd.*

Guizotia abyssinica, *Cass.*

Gunnera manicata, *Linden.*

Gypsophila anatolica, *Boiss. & Heldr.*
paniculata, *L.*
Rokejeka, *Delile.*

Hablitzia tamnoides, *Bieb.*

Halenia elliptica, *D. Don.*

Hastingia alba, *S. Wats.*

Hebenstreitia comosa, *Hochst.*
tenuifolia, *Schrad.*

Hedysarum boreale, *Nutt.*
coronarium, *L.*
elongatum, *Fisch.*
esculentum, *Ledeb.*
microcalyx, *Baker.*
neglectum, *Ledeb.*
obscurum, *L.*

Helenium Bigelovii, *A. Gray.*
quadridentatum, *Labill.*
tenuifolium, *Nutt.*

Helianthella quinquenervis, *A. Gray.*
uniflora, *Torr. & Gray.*

Helianthemum salicifolium, *Mill.*
villosum, *Thib.*
vulgare, *Gaertn.*

Helianthus annuus, *L.*
argophyllus, *Torr. & Gray.*
debilis, *Nutt.*
decapetalus, *L.*
exilis, *A. Gray.*
giganteus, *L.*
mollis, *Lam.*
Nuttallii, *Torr. & Gray.*
rigidus, *Desf.*

Helichrysum bracteatum, *Andr.*

Heliophila amplexicaulis, *L. f.*

Heliopsis laevis, *Pers.*
pitcheriana, *Hort.*

Heliotropium europaeum, *L.*

Helipterum floribundum, *DC.*
humboldtianum, *DC.*
Manglesii, *F. Muell.*
microglossum, *Tate.*
polygalifolium, *DC.*
roseum, *Benth.*
Troedeli, *F. Muell.*

Helleborus colchicus, *Regel.*
orientalis, *Lam.*

Helonias bullata, *L.*

Hemerocallis flava, *L.*
fulva, *L.*
minor, *Mill.*
Middendorfii, *Trautv. & Mey.*

Heracleum gummiferum, *Willd.*
lanatum, *Michx.*
lehmannianum, *Bunge.*
mantegazzianum, *Levier & Somm.*
pyrenaicum, *Lam.*
Sphondylium, *L.*
villosum, *Fisch.*

Herniaria glabra, *L.*
hirsuta, *L.*

Hesperis matronalis, *L.*

Heterospermum pinnatum, *Cav.*

Heuchera cylindrica, *Dougl.*
Drummondi, *Hort.*
glabra, *Willd.*
pilosissima, *Fisch. & Mey.*
sanguinea, *Engelm.*

Hibiscus Trionum, *L.*

Hieracium aurantiacum, *L.*
blyttianum, *Fries.*
bupleuroides, *C. C. Gmel.*
compositum, *Lapeyr.*
corymbosum, *Fries.*
crocatum, *Fries.*
eximium, *Backh.*
foliosum, *W. K.*
glaucum, *All.*
gracilentum, *Backh.*
gymnocephalum, *Griseb.*
Heldreichii, *Boiss.*
humile, *Jacq.*
intybaceum, *Jacq.*
lanatum, *Waldst. & Kit.*
lactucaefolium, *Arv.-Tour.*
maculatum, *Schrank.*
murorum, *L.* var. integrifolium, *Lange.*
norvegicum, *Fries.*
pallidum, *Biv.*
pannosum, *Boiss.*
prenanthoides, *Vill.*
rigidum, *Hartm.*
rubrum, *Peter.*
rupestre, *All.*
stoloniflorum, *Waldst. & Kit.*
umbellatum, *L.*
villosum, *Jacq.*
vulgatum, *Fries.*

Hilaria rigida, *Vasey.*

Hippocrepis multisiliquosa, *L.*

Hippuris vulgaris, *L.*

Holcus lanatus, *L.*
mollis, *L.*

Holosteum umbellatum, *L.*

Hordeum bulbosum, *L.*
ithaburense, *Boiss.*
maritimum, *With.*
murinum, *L.*

Hosackia purshiana, *Benth.*

Humulus japonicus, *Sieb. & Zucc.*
— var. variegatus.
Lupulus, *L.*

Hunnemannia fumariaefolia, *Sweet.*

Hutchinsia petraea, *R. Br.*

Hyacinthus amethystinus, *L.*
romanus, *L.*

Hydrocotyle repanda, *Pers.*
vulgaris, *L.*

Hydrophyllum appendiculatum, *Michx.*
virginicum, *L.*

Hyoscyamus muticus, *L.*
niger, *L.*

Hypecoum grandiflorum, *Benth.*
procumbens, *L.*

Hypericum erectum, *Thunb.*
linarifolium, *Vahl.*
montanum, *L.*
olympicum, *L.*
orientale, *L.*
perforatum, *L.*
polyphyllum, *Boiss.*
pulchrum, *L.*
pyramidatum, *Ait.*
quadrangulum, *L.*
rhodopeum, *Friv.*

Hypochoeris aetnensis, *Benth & Hook. f.*
glabra, *L.*

Hyssopus officinalis, *L.*
—var. aristatus, (*Jord.*).

Iberis amara, *L.*
pectinata, *Boiss.*
pinnata, *Gouan.*
umbellata, *L.*

Illecebrum verticillatum, *L.*

Impatiens balsamina, *L.*
chrysantha, *Hook. f.*
fulva, *Nutt.*
parviflora, *DC.*
Roylei, *Walp.*

Incarvillea variabilis, *Batalin.*

Inula barbata, *Wall.*
bifrons, *L.*
britannica, *L.*
glandulosa, *Puschk.*
grandiflora, *Willd.*
Helenium, *L.*
Oculus-Christi, *L.*
Roylei, *DC.*
salicina, *L.*
thapsoides, *Spreng.*

Ionopsidium acaule, *Reichb.*

Ipomoea purpurea, *Lam.*

Iris albopurpurea, *Baker.*
aurea, *Lindl.*
ensata, *Thunb.*
foetidissima, *L.*
— var. citrina.
graminea, *L.*
— var. latifolia.
guldenstaedtiana, *Lepech.*
— var. sogdiana, (*Bunge*)
humilis, *Bieb.*
juncea, *Poir.*
laevigata, *Fisch.*
missouriensis, *Nutt.*
Monnieri, *DC.*
neglecta, *Horn.*
orientalis, *Mill.*
setosa, *Pall.*
sibirica, *L.*
— var. acuta.
— var. coreana.
— var. orientalis, *Baker.*
spuria, *L.*
— var. notha, (*Bieb.*).
tenax, *Dougl.*
xiphioides, *Ehrh.*

Isatis glauca, *Auch.*
tinctoria, *L.*
Villarsii, *Gaud.*

Isopyrum fumarioides, *L.*

Isotoma axillaris, *Lindl.*

Iva xanthifolia, *Nutt.*

Jasione perennis, *Lam.*

Jasonia tuberosa, *L.*

Juncus alpinus, *Vill.*
arcticus, *Willd.*
bufonius, *L.*
Chamissonis, *Kunth.*
compressus, *Jacq.*
conglomeratus, *L.*
effusus, *L.*
glaucus, *Sibth.*
lamprocarpus, *Ehrh.*
maritimus, *Lam.*
squarrosus, *L.*
tenuis, *Willd.*

Jurinea alata, *Cass.*

Kitaibelia vitifolia, *Willd.*

Kniphofia aloides, *Moench.*
corallina, *Hort.*
foliosa, *Hochst.*
Tuckii, *Baker.*

Kochia scoparia, *Schrad.*

Koeleria albescens, *DC.*
cristata, *Pers.*
phleoides, *Pers.*
— var. grandiflora, *Boiss.*

Lactuca brevirostris, *Champ.*
muralis, *E. Mey.*
Plumieri, *Gren. & Godr.*
saligna, *L.*
sativa, *L.*
Scariola, *L.*
virosa, *L.*

Lagenaria vulgaris, *Ser.*

Lallemantia canescens, *Fisch. & Mey.*
iberica, *Fisch. & Mey.*
peltata, *Fisch. & Mey.*

Lamarckia aurea, *Moench.*

Lamium album, *L.*
Galeobdolon, *Crantz.*
purpureum, *L.*

Lapsana communis, *L.*

Laserpitium hispidum, *Bieb.*
latifolium, *L.*

Lasiospermum radiatum, *Trevir.*

Lasthenia glabrata, *Lindl.*

Lathraea Squamaria, *L.*

Lathyrus angulatus, *L.*
Aphaca, *L.*
articulatus, *L.*
Cicera, *L.*
cirrhosus, *Ser.*
Clymenum, *L.*
cyaneus, *C. Koch.*
filiformis, *Gay.*
Gorgoni, *Parl.*
latifolius, *L.*
luteus, *Baker.* var. aureus, (*Stev.*).
maritimus, *Bigel.*
montanus, *Bernh.*
niger, *Bernh.*
Nissolia, *L.*
Ochrus, *DC.*
odoratus, *L.*
palustris, *L.*
polyanthus, *Boiss. & Blanché.*
polyphyllus, *Nutt.*
rotundifolius, *Willd.*
sativus, *L.*
sphaericus, *Retz.*
sylvestris, *L.*
tingitanus, *L.*
tuberosus, *L.*
undulatus, *Boiss.*
variegatus, *Gren. & Godr.*
venosus, *Muhl.*
vernus, *Bernh.*
violaceus, *Greene.*

Laurentia tenella, *A. DC.*

Lavatera cachemiriana, *Cambess.*
Olbia, *L.*
plebia, *Sims.*
thuringiaca, *L.*
trimestris, *L.*

Layia elegans, *Torr. & Gray.*
glandulosa, *Hook. & Arn.*
platyglossa, *A. Gray.*

Lens esculenta, *Moench.*

Leontodon asperrimus, *Boiss.*
crispus, *Vill.*
Ehrenbergii, *Hort. Kew.*
hastilis, *L.*

Leontopodium alpinum, *Cass.*

Leonurus Cardiaca, *L.*
sibiricus, *L.*
tataricus, *L.*

Lepachys columnaris, *Torr. & Gray.*

Lepidium Draba, *L.*
graminifolium, *L.*
incisum, *Roth.*
Menziesii, *DC.*
nebrodense, *Guss.*
sativum, *L.*

Leptosyne Bigelovii, *A. Gray.*
calliopsidea, *A. Gray.*
Douglasii, *DC.*
maritima, *A. Gray.*

Lepturus cylindricus, *Trin.*

Leuzea conifera, *DC.*

Levisticum officinale, *Koch.*

Liatris spicata, *Willd.*

Ligusticum alatum, *Spreng.*
pyrenaicum, *Gouan.*
scoticum, *L.*
Seguieri, *Koch.*

Lilium Martagon, *L.*
pomponium, *L.*
pyrenaicum, *Gouan.*

Limnanthes alba, *Hartw.*
rosea, *Hartw.*

Linaria albifrons, *Spreng.*
alpina, *Mill.*
anticaria, *Boiss. & Reut.*
bipartita, *Willd.*
dalmatica, *Mill.*
genistifolia, *Mill.*
hirta, *Moench.*
maroccana, *Hook. f.*
minor, *Desf.*
multipunctata, *Hoffmgg. & Link.*
pelisseriana, *Mill.*

Linaria, *cont.*
peloponnesiaca, *Boiss. & Heldr.*
purpurea, *L.*
reticulata, *Desf.*
saxatilis, *Hoffmgg. & Link.*
spartea, *Hoffmgg. & Link.*
striata, *DC.*
triornithophora, *Willd.*
triphylla, *Mill.*
tristis, *Mill.*
vulgaris, *Mill.*

Lindelophia spectabilis, *Lehm.*

Linum angustifolium, *Huds.*
grandiflorum, *Desf.*
narbonense, *L.*
nervosum, *Waldst. & Kit.*
perenne, *L.*
usitatissimum, *L.*

Lippia nodiflora, *Michx.*

Loasa hispida, *L.*
lateritia, *Gill.*
vulcanica, *Andre.*

Lobelia cardinalis, *L.*
Erinus, *L.*
inflata, *L.*
sessilifolia, *Lamb.*
syphilitica, *L.*
tenuior, *R. Br.*
triquetra, *L.*

Lolium multiflorum, *Lam.*
perenne, *L.*
temulentum, *L.*

Lonas inodora, *Gaertn.*

Lopezia coronata, *Andr.*

Lotus corniculatus, *L.*
edulis, *L.*
Jacobaeus, *L.*
ornithopodioides, *L.*
siliquosus, *L.*
Tetragonolobus, *L.*

Lupinus affinis, *Agardh.*
angustifolius, *L.*
Cosentini, *Guss.*
Crukshanksii, *Hook.*
densiflorus, *Benth.*
elegans, *H. B. & K.*
leptophyllus, *Benth.*

Lupinus, *cont.*
micranthus, *Dougl.*
mutabilis, *Sw.*
nanus, *Dougl.*
polyphyllus, *Lindl.*
pubescens, *Benth.*
subcarnosus, *Hook.*
tricolor, *Hort.*
varius, *L.*

Luzula maxima, *DC.*
nivea, *DC.*

Lychnis alba, *Mill.*
chalcedonica, *L.*
Coeli-rosea, *Backh.*
coronaria, *Desr.*
— var. oculata.
corsica, *Loisel.*
dioica, *L.*
Flos-cuculi, *L.*
Flos-jovis, *Desr.*
fulgens, *Fisch.*
Githago, *Scop.*
haageana, *Lemaire.*
pauciflora, *Ledeb.*
pyrenaica, *Berger.*
Viscaria, *L.*

Lycopersicum esculentum, *Mill.*

Lycopus europaeus, *L.*
exaltatus, *L.*

Lycurus phleoides, *H. B. & K.*

Lysimachia barystachys, *Bunge.*
clethroides, *Duby.*
punctata, *L.*
vulgaris, *L.*

Lythrum Graefferi, *Tenore.*
hyssopifolia, *L.*
Salicaria, *L.*

Madia elegans, *D. Don.*
sativa, *Molina.*
— var. congesta, *A. Gray.*

Malcolmia flexuosa, *Sibth.*
maritima, *R. Br.*
mongolica, *Maxim.*

Malope trifida, *Cav.*

Malva crispa, *L.*
Duriaei, *Hort. Kew.*
oxyloba, *Boiss.*
parviflora, *L.*
rotundifolia, *L.*
sylvestris, *L.*

Malvastrum limense, *Ball.*

Mandragora officinarum, *L.*

Marrubium astracanicum, *Jacq.*
catariaefolium, *Desr.*
pannonicum, *Reichb.*
vulgare, *L.*

Martynia formosa, *Hort.*
fragrans, *Lindl.*
lutea, *Lindl.*
proboscidea, *Glox.*

Matricaria glabra, *Ball.*
inodora, *L.*
Tchihatchewii, *Hort. Kew.*

Matthiola incana, *R. Br.*
sinuata, *R. Br.*
tricuspidata, *R. Br.*

Mazus rugosus, *Lour.*

Meconopsis cambrica, *Vig.*
heterophylla, *Benth.*

Medicago apiculata, *Willd.*
carstiensis, *Wulf.*
falcata, *L.*
hispida, *Gaertn.*
littoralis, *Rhode.*
lupulina, *L.*
maculata, *Sibth.*
marina, *L.*
Murex, *Willd.*
orbicularis, *All.*
ruthenica, *Trautv.*
sativa, *L.*
scutellata, *All.*
turbinata, *Willd.*

Melica altissima, *L.*
ciliata, *L.*
— var. Magnoli, (*Gren. & Godr.*).
glauca, *F. Schultz* var. nebrodensis, (*Parl.*).
nutans, *L.*
uniflora, *Retz.*

Melilotus alba, *Desr.*
indica, *All.*
officinalis, *Lam.*

Melissa officinalis, *L.*

Mentha Pulegium, *L.*
rotundifolia, *Huds.*
rubra, *Sm.*
sylvestris, *L.*
viridis, *L.*

Mercurialis annua, *L.*

Mertensia sibirica, *G. Don.*

Mesembryanthemum pomeridianum, *L.*
pinnatifidum, *L.*
pyropeum, *Haw.*
tricolor, *Willd.*

Meum Athamanticum, *Jacq.*

Mibora verna, *Beauv.*

Microseris attenuata, *Greene.*

Mimulus cardinalis, *Dougl.*
luteus, *L.*
moschatus, *Dougl.*

Mirabilis divaricata, *Lowe.*
Jalapa, *L.*
longiflora, *L.*

Modiola multifida, *Moench.*

Molopospermum cicutarium, *DC.*

Monarda citriodora, *Cerv.*
didyma, *L.*
fistulosa, *L.*

Monardella lanceolata, *A. Gray.*

Monolepis trifida, *Schrad.*

Moricandia arvensis, *DC.*

Morina longifolia, *Wall.*

Muehlenbergia mexicana, *Trin.*
sylvatica, *Torr. & Gray.*
Willdenovii, *Trin.*

Muscari Argaei, *Hort.*
armeniacum, *Baker.*
atlanticum, *Boiss. & Reut.*
comosum, *Mill.*
compactum, *Baker.*
Muscari, *cont.*
Heldreichii, *Boiss.*
latifolium, *Kirk.*
neglectum, *Guss.*
racemosum, *Mill.*
suaveolens, *Fisch.*
szovitsianum, *Baker.*

Myosotis arvensis, *Lam.*
palustris, *Lam.*
sylvatica, *Hoffm.*

Myosurus minimus, *L.*

Myrrhis odorata. *Scop.*

Nemesia floribunda, *Lehm.*
pubescens, *Benth.*
versicolor, *E. Mey.*

Nemophila insignis, *Dougl.*
maculata, *Benth.*
Menziesii, *Hook. & Arn.*
parviflora, *Dougl.*

Nepeta caesarea, *Boiss.*
Cataria. *L.*
concolor, *Boiss. & Heldr.*
dirphya, *Heldr.*
macrantha, *Fisch.*
Mussini, *Spreng.*
Nepetella, *L.*
nuda, *L.*
spicata, *Benth.*
suavis, *Stapf.*

Nesaea salicifolia, *H. B. & K.*
var. grandiflora.

Nicandra physaloides, *Gaertn.*

Nicotiana acuminata, *Hook.*
alata, *Link & Otto.*
Bigelovii, *Wats.*
Langsdorffii, *Schrank.*
noctiflora, *Hook.*
paniculata, *L.*
rustica, *L.* var. scabra, *Comes.*
sylvestris, *Spegaz & Comes.*
Tabacum, *L.*

Nigella damascena, *L.*
hispanica, *L.*
orientalis, *L.*
sativa, *L.*

Nolana prostrata, *L.*

Nonnea lutea, *Reichb.*

Nothoscordum fragrans, *Kunth.*

Ocimum gratissimum, *L.*

Odontospermum aquaticum, *Sch. Bip.*

Œnanthe crocata, *L.*
pimpinelloides, *L.*
silaifolia, *Bieb.*

Œnothera amoena, *Lehm.*
berteriana, *Spach.*
biennis, *L.*
— var. grandiflora, *Torr. & Gray.*
densiflora, *Lindl.*
dentata, *Cav.*
fruticosa, *L.*
glauca, *Michx.*
minutiflora, *D. Dietr.*
nocturna, *Jacq.*
odorata, *Jacq.*
pumila, *L.*
riparia, *Nutt.*
rosea, *Ait.*
sinuata, *L.*
speciosa, *Nutt.*
tenella, *Cav.*
tetraptera, *Cav.*
triloba, *Nutt.*

Omphalodes linifolia, *Moench.*

Onobrychis sativa, *Lam.*

Ononis arvensis, *L.*
Natrix, *L.*
rotundifolia, *L.*
spinosa, *L.*

Onopordon Acanthium, *L.*
illyricum, *L.*

Onosma albo-roseum, *Fisch. & Mey.*

Orchis foliosa, *Soland.*
incarnata, *L.*
latifolia, *L.*
maculata, *L.*

Origanum vulgare, *L.*

Ornithogalum arcuatum, *Stev.*
exscapum, *Tenore.*
fimbriatum, *Willd.*
Ornithogalum, *cont.*
nutans, *L.*
orthophyllum, *Tenore.*

Ornithopus ebracteatus, *Brot.*
perpusillus, *L.*
sativus, *Brot.*

Orobanche elatior, *Sutt.*
Hederae, *Duby.*
minor, *Sutt.*
ramosa, *L.*

Oryza sativa, *L.*

Oryzopsis multiflora, *Benth. & Hook. f.*

Ostrowskia magnifica, *Regel.*

Oxybaphus nyctagineus, *Sweet.*

Oxyria digyna, *Hill.*

Oxytropis baikalensis, *Pall.*
campestris, *DC.*
ochroleuca, *Bunge.*

Paeonia Emodi, *Wall.*
Broteri, *Boiss.*
officinalis, *L.*
paradoxa, *Anders.*
peregrina, *Mill.*

Palaua dissecta, *Benth.*

Pallenis spinosa, *Cass.*

Panicum adspersum, *Trin.*
capillare, *L.*
colonum, *L.*
Crus-galli, *L.*
Isachne, *Roth.*
miliaceum, *L.*
sanguinale, *L.*
virgatum, *L.*

Papaver alpinum, *L.*
aculeatum, *Thunb.*
apulum, *Tenore.*
arenarium, *Bieb.*
Argemone, *L.*
commutatum, *Fisch.*
dubium, *L.*
glaucum, *Boiss. & Hausskn.*
laevigatum, *Bieb.*
nudicaule, *L.*
orientale, *L.*
— var. bracteatum, (*Lindl.*).
pavoninum, *Mey.*

Papaver, *cont.*
persicum, *Lindl.*
pilosum, *Sibth. & Sm.*
Rhoeas, *L.*
— var. latifolium, *Prain.*
rupifragum, *Boiss. & Reut.*
— var. atlanticum, *Ball.*
somniferum, *L.*
spicatum, *Boiss.*

Paracaryum heliocarpum, *Kerner.*

Paradisia Liliastrum, *Bertol.*

Parietaria officinalis, *L.*

Parnassia nubicola, *Wall.*
palustris, *L.*

Patrinia hispida, *Bunge.*
villosa, *Juss.*

Peganum Harmala, *L.*

Peltaria alliacea, *Jacq.*

Pennisetum macrourum, *Trin.*
typhoideum, *Rich.*

Pentstemon campanulatus, *Willd.*
confertus, *Dougl.*
glaber, *Pursh.*
glaucus, *Grah.* var. stenosepalus, *A. Gray.*
laevigatus, *Soland.* var. Digitalus, *A. Gray.*
Menziesii, *Hook.* var. Newberryi, *A. Gray.*
— var. Scouleri, *A. Gray.*
ovatus, *Dougl.*
pubescens, *Soland.*

Perezia multiflora, *Less.*

Petunia nyctaginiflora, *Juss.*

Peucedanum aegopodioides, *Vandas.*
cnidioides, *Boiss. & Heldr.*
coriaceum, *Reichb. f.*
graveolens, *Benth.*
officinale, *L.*
sativum, *Benth. & Hook. f.*
Schottii, *Bess.*
Sowa, *Kurz.*

Phacelia bipinnatifolia, *Michx.*
campanularia, *A. Gray.*
loasaefolia, *Torr.*
Parryi, *Torr.*
tanacetifolia, *Benth.*
viscida, *Torr.*
Whitlavia, *A. Gray.*

Phalaris canariensis, *L.*
intermedia, *Bor.*
paradoxa, *L.*
tuberosa, *L.*

Phaseolus multiflorus, *Willd.*
ricciardianus, *Tenore.*
tuberosus, *Lour.*
vulgaris, *L.*

Phleum asperum, *Jacq.*
Boehmeri, *Wibel.*
pratense, *L.*

Phlomis agraria, *Bunge.*
cashmiriana, *Royle.*
lunarifolia, *Sibth. & Sm.*
setigera, *Falc.*
tuberosa, *L.*
umbrosa, *Turcz.*
viscosa, Poir.

Physalis Alkekengi, *L.*
Francheti, *Mast.*
peruviana, *L.*
philadelphica, *Lam.*

Physochlaina orientalis, *G. Don.*

Physostegia virginiana, *Benth.*

Phyteuma canescens, *Waldst. & Kit.*
Halleri, *All.*
Michelii, *All.*
Scheuchzeri, *All.*
— var. Charmelii, *Vill.*
scorzonerifolium, *Vill.*
serratum, *Viv.*
spicatum, *L.*

Phytolacca acinosa, *Roxb.*
bogotensis, *H. B. & K.*
octandra, *L.*

Picridium tingitanum, *Desf.*

Picris echioides, *L.*
hieracioides, *L.*
pauciflora, *Willd.*

Pilea robusta, *Leibm.*

Pimpinella rotundifolia, *Bieb.*

Pisum arvense, *L.*
elatius, *Bieb.*
sativum, *L.*

Plantago arenaria, *Waldst. & Kit.*
Candollei, *Rafin.*
Coronopus, *L.*
Cynops, *L.*
Lagopus, *L.*
maritima, *L.*
media, *L.*
ovata, *Forsk.*
patagonica, *Jacq.*
virginica, *L.*

Platycodon grandiflorum, *A. DC.*
— var. Mariesii.

Platystemon californicus, *Benth.*

Plectranthus glaucocalyx, *Maxim.*

Pleurospermum angelicoides, *Benth.*

Plumbago micrantha, *Ledeb.*

Poa abyssinica, *Jacq.*
caesia, *Sm.*
caespitosa, *Forst.*
Chaixii, *Vill.*
compressa, *L.*
nemoralis, *L.*
nevadensis, *Vasey.*
palustris, *Roth.*
pratensis, *L.*
trivialis, *L.*
violacea, *Bell.*

Podolepis acuminata, *R. Br.*

Podophyllum Emodi, *Wall.*

Polemonium caeruleum, *L.*
flavum, *Greene.*
himalayanum. *Baker.*
pauciflorum, *S. Wats.*

Polycarpaea latifolia, *Poir.*

Polygonatum biflorum, *Ell.*
verticillatum, *All.*

Polygonum affine, *D. Don.*
alatum, *Buch-Ham.*
alpinum, *All.* var. polymorphum, *Ledeb.*
baldschuanicum, *Regel.*
Bistorta, *L.*
capitatum, *Buch-Ham.*
compactum, *Hook. f.*
Convolvulus, *L.*
lapathifolium, *L.*
molle, *D. Don.*
orientale, *L.*
Persicaria, *L.*
Weyrichii, *F. Schmidt.*

Polypogon littoralis, *Sm.*
maritimus, *Willd.*
monspeliensis, *Desf.*

Portulaca grandiflora, *Hook.*

Potentilla alchemilloides, *Lapeyr.*
alpestris, *Hall. f.*
argentea, *L.*
— var. calabra, (*Tenore*).
arguta, *Pursh.*
argyrophylla, *Wall.*
aurea, *L.*
calycina, *Boiss. & Bal.*
chinensis, *Ser.*
chrysantha, *Trevir.*
Comarum, *Nestl.*
collina, *Wibel.*
desertorum, *Bunge.*
Detommasii, *Tenore.*
glandulosa, *Lindl.*
gracilis, *Dougl.*
heptaphylla, *Mill.*
hippiana, *Lehm.*
hirta, *L.*
— var. pedata, *Lehm.*
kurdica, *Boiss.*
leschenaultiana, *Ser.*
montenegrina, *Pantoc.*
multifida, *L.*
nepalensis, *Hook.*
opaca, *L.*
pedunculatis, *D. Don.*
pennsylvanica, *L.* var. arachnoidea, *Lehm.*
pyrenaica, *Ramond.*
recta, *L.*
— var. laciniata.
— var. macrantha.
— var. palmata.

Potentilla, *cont.*
rivalis, *Nutt.* var. millegrana, *S. Wats.*
rupestris, *L.*
sanguisorbifoila, *F. C. Wolf.*
semi-laciniata, *Hort.*
sericea, *L.*
Sibbaldi, *Hall. f.*
tanacetifolia. *Willd.*
tridentata, *Soland.*
villosa, *Pall.*
Visianii, *Panč.*
wrangeliana, *Fisch. & Mey.*

Poterium alpinum, *Hort. Kew.*
officinale, *A. Gray.*
Sanguisorba, *L.*
tenuifolium, *Franch. & Sav.*

Pratia angulata, *Hook. f.*

Prenanthes purpurea, *L.*

Preslia cervina, *Fresen.*

Primula denticulata, *Sm.*
elatior, *Hill.*
Forbesii, *Franch.*
japonica, *A. Gray.*
mollis, *Nutt.*
officinalis, *Jacq.*
rosea, *Royle.*
Stuarti, *Wall.*
suffrutescens, *A. Gray.*
variabilis, *Goup.*
vulgaris, *Huds.*

Prunella grandiflora, *Jacq.*
laciniata, *L.*
vulgaris, *L.*

Psoralea acaulis, *Steud.*
macrostachya, *DC.*
Onobrychis, *Nutt.*
physodes, *Hook.*

Pterostegia drymarioides, *Fisch. & Mey.*

Pulicaria dysenterica, *Gaertn.*
vulgaris, *Gaertn.*

Pycnanthemum lanceolatum, *Pursh.*

Pyrrhopappus carolinianus, *DC.*

Queria hispanica, *L.*

Ramondia pyrenaica, *Rich.*

Ranunculus aconitifolius, *L.*
acris, *L.*
arvensis, *L.*
brutius, *Tenore.*
Cymbalaria, *Pursh.*
falcatus, *L.*
lanuginosus, *L.*
muricatus, *L.*
ophioglossifolius, *Vill.*
parviflorus, *L.*
sardous, *Crantz.*
subscaposus, *Hook.*
trilobus, *Desf.*

Raphanus maritimus, *Sm.*
sativus, *L.*

Rapistrum rugosum, *Berger.*

Relhania sessilifolia.

Reseda alba, *L.*
glauca, *L.*
lutea, *L.*
Luteola, *L.*
odorata, *L.*
virgata, *Boiss. & Reut.*

Reutera gracilis, *Boiss.*

Rhagadiolus stellatus, *Gaertn*

Rheum collinianum, *Baill.*
Emodi, *Wall.*
Franzenbachii, *Muent.*
macropterum, *Mart.*
nobile, *Hook. f.*
officinale, *Baill.*
palmatum, *L.*
Rhaponticum, *L.*
Ribes, *L.*
undulatum, *L.*
webbianum, *Royle.*

Richardsonia pilosa, *H. B. & K.*

Ricinus communis, *L.*

Roemeria hybrida, *DC.*

Rubia cordifolia, *L.*
tinctorum, *L.*

Rudbeckia amplexicaulis, *Vahl.*
digitata, *Mill.*
laciniata, *L.*
speciosa, *Wender.*

Rumex alpinus, *L.*
biformis, *Lange.*
bucephalophorus, *L.*
conglomeratus, *Murr.*
crispus, *L.*
maritimus, *L.*
maximus, *Schreb.*
occidentalis, *S. Wats.*
orientalis, *Bernh.*
Patientia, *L.*
pulcher, *L.*
salicifolius, *Weinm.*
sanguineus, *L.*
scutatus, *L.*
vesicarius, *L.*

Ruta graveolens, *L.*
montana, *L.*

Sagina glabra, *Fenzl.*
— var. pilifera, (*Fenzl*).

Sagittaria sagittifolia, *L.*

Salsola Kali, *L.* var. Tragus, *Nym.*

Salvia argentea, *L.*
Beckeri, *Trautv.*
cadmica, *Boiss.*
carduacea, *Benth.*
Columbariae, *Benth.*
glutinosa, *L.*
Horminum, *L.*
— var. bracteis roseis.
— var. bracteis violaceis.
interrupta, *Schousb.*
japonica, *Thunb.*
moorcroftiana, *Wall.*
nubicola, *Wall.*
nutans, *L.*
officinalis, *L.*
pratensis, *L.*
regeliana, *Trautv.*
schiedeana, *Stapf.*
Sclarea, *L.*
sylvestris, *L.*
tiliaefolia, *Vahl.*
Verbenaca, *L.*
verticillata, *L.*
viscosa, *Jacq.*

Sambucus Ebulus, *L.*

Samolus Valerandi, *L.*

Saponaria orientalis, *L.*
officinalis, *L.*
Vaccaria, *L.*

Saracha Jaltomata, *Schlecht.*

Satureia hortensis, *L.*

Saussurea albescens. *Hook. f. & Thoms.*
candicans, *C. B. Clarke.*
deltoidea, *C. B. Clarke.*
discolor, *DC.*

Saxifragra Aizoides, *L.*
Aizoon, *L.*
— var. Gaudinii, (*Bruegg.*).
— var. notata.
caespitosa, *L.*
— var. hirta.
cartilaginea, *Willd.*
catalaunica, *Boiss. & Reut.*
cernua, *L.*
cochlearis, *Reichb.*
Cotyledon, *L.*
— var. pyramidalis, (*Lapeyr.*).
crustata, *Vest.*
cuneifolia, *L.* var. infundibuliformis, (*Lange*).
— var. multicaulis, (*Lange*).
— var. subintegra, (*Ser.*).
decipiens, *Ehrh.* var. Steinmanni, (*Tausch*).
erosa, *Pursh.*
flagellaris, *Willd.*
Geum, *L.*
granulata, *L.*
Hostii, *Tausch.*
— var. altissima, (*Kern.*).
— var. macnabiana, *Hort.*
hypnoides, *L.*
lingulata, *Bell.*
— var. lantoscana, (*Boiss. & Reut.*).
luteo-viridis, *Schott & Kotsch.*
marginata, *Sternb.*
mertensiana, *Bongard.*
montavoniensis, *Kern.*
pedatifida, *Ehrh.*
peltata, *Torr. & Gray.*
Regeli, *Kerner.*
rotundifolia, *L.*
— var. hirsuta.
sarmentosa, *L.*

Saxifragra, *cont.*
Sibthorpii, *Boiss.*
stenoglossa, *Tausch.*
taygetea, *Hort.* (not *Boiss. & Heldr.*),
tenella, *Wulf.*
trifurcata, *Schrad.*
— var. ceratophylla, *Dryand.*
umbrosa, *L.*
— var. gracilis.

Scabiosa arvensis, *L.*
atropurpurea, *L.*
australis, *Wulf.*
banatica, *Waldst. & Kit.*
calocephala, *Boiss.*
caucasica, *Bieb.*
Columbaria, *L.*
Fischeri, *DC.*
fumarioides, *Vis. & Panč.*
graminifolia, *L.*
gramuntia, *L.*
integrifolia, *L.*
isetensis, *L.*
lancifolia, *Lernat.*
longifolia, *Waldst. & Kit.*
macedonica, *Vis.*
maritima, *L.*
micrantha, *Desf.*
orientalis, (*L.*).
palaestina, *L.*
plumosa, *Sibth. & Sm.*
prolifera, *L.*
Pterocephala, *L.*
succisa, *L.*
triniaefolia, *Frivald.*
vestina, *Facc.*

Scandix Balansae, *Reut.*

Schizanthus pinnatus, *Ruiz & Pav.*
retusus, *Hook.*

Schizopetalum Walkeri, *Sims.*

Schkuhria senecioides, *Nees.*

Scilla amoena, *L.*
bifolia, *L.*
festalis, *Salisb.*
hispanica, *Mill.*
Lilio-Hyacinthus, *L.*
messeniaca, *Boiss.*
peruviana, *L.*
sibirica, *Andrews.*
verna, *Huds.*

Scirpus Carices, *Retz.*
Eriophorum, *Michx.*
Holoschoenus, *L.*
lacustris, *L.*
maritimus, *L.*
polyphyllus, *Vahl.*
sylvaticus, *L.*
triqueter, *L.*

Scleranthus annuus, *L.*

Sclerocarpus uniserialis, *Benth. & Hook. f.*

Scolymus maculatus, *L.*

Scopolia lurida, *Dun.*

Scorpiurus vermiculata, *L.*

Scorzonera austriaca, *Willd.* var. latifolia.
villosa, *Scop.*

Scrophularia alata, *Gilib.*
aquatica, *L.*
chrysantha, *Jaub. & Spach.*
nodosa, *L.*
peregrina, *L.*
sylvatica, *Boiss. & Heldr.*
vernalis, *L.*

Scutellaria albida, *L.*
alpina, *L.*
altissima, *L.*
baicalensis, *Georgi.*
galericulata, *L.*
hirta, *Sibth. & Sm.*
indica, *L.*
scordiifolia, *Fisch.*

Securigera Coronilla, *L.*

Sedum acre, *L.*
Aizoon, *L.*
album, *L.*
Ewersii, *Ledeb.*
hispanicum, *L.*
populifolium, *Pall.*
pulchellum, *Michx.*
roseum, *Scop.*
rubens, *L.*
spathulifolium, *Hook.*
Telephium, *L.*

Selinum Carvifolia, *L.*
Gmelini, *Bray.*
vaginatum, *C. B. Clarke.*

Sempervivum arachnoideum, *L.*
— var. Laggeri, *Schnittsp.*
arvernense, *Lecoq & Lamotte.*
assimile, *Schott.*
bicolor, *Hort.*
Boissieri, *Hort.*
boutignyanum, *Billot & Gren.*
caucasicum, *Rupr.*
fimbriatum, *Schnittsp.*
Funckii, *F. Braun.*
leucanthemum, *Panč.*
mettenianum, *Schnittsp.*
montanum, *L.*
obscurum, *Hort.*
Pilosella, *Hort.*
parvulum, *Jord. & Fourr.*
Royeni, *Hort.*
Schottii, *Baker.* var. acuminatum, (*Schott*).
speciosum, *Lamotte.*
tectorum, *L.*
— var. rusticanum, *Hort.*
Verloti, *Lamotte.*

Senecio adonidifolius, *Loisel.*
campestris, *DC.* var maritima, *Syme.*
Cineraria, *DC.*
diversifolius, *Wall.*
Doria, *L.*
elegans, *L.*
Fetisowii, *Regel.*
Hodgsoni, *Hort. Kew.*
japonicus, *Sch. Bip.*
Kaempferi, *DC.*
lautus, *Soland.*
macrophyllus, *Bieb.*
nemorensis, *L.*
paludosus, *L.*
squalidus, *L.*
suaveolens, *Ell.*
thapsoides, *DC.*
viscosus, *L.*

Serratula coronata, L.
Gmelini, *Ledeb.*
quinquefolia, *Bieb.*
tinctoria, *L.*

Sesamum indicum, *L.*

Seseli annuum, *L.*
elatum, *L.*
gummiferum. *Sm.*
Hippomarathrum, *L.*
Seseli, *cont.*
Libanotis, *Koch.*
osseum, *Crantz.*
tenuifolium, *L.*

Setaria italica, *Beauv.*
macrochaeta, *Spreng.*
verticillata, *Beauv.*
viridis, *Beauv.*
vulpiseta, *Roem. & Schult.*

Sherardia arvensis, *L.*

Sida Napaea, *Cav.*

Sidalcea candida, *A. Gray.*
Listeri, *Hort.*
malvaeflora, *A. Gray.*
Mariana, *Hort.*

Sideritis Eubaea, *Boiss. & Heldr.*
montana, *L.*
scordioides, *L.*

Siegesbeckia orientalis, *L.*

Silaus flavescens, *Bernh.*
tenuifolius, *DC.*

Silene alpestris, *Jacq.*
anglica, *L.*
Armeria, *L.*
ciliata, *Pourr.*
clandestina, *Jacq.*
colorata, *Poir.*
conoidea, *L.*
cretica, *L.*
Cucubalus, *Wibel.*
echinata, *Otth.*
fimbriata, *Sims.*
flavescens, *Waldst. & Kit.*
Fortunei, *Vis.*
fruticulosa, *Sieber.*
fuscata, *Link.*
gallica, *L.*
glauca, *Pourr.*
italica, *Pers.*
juvenalis, *Delile.*
laeta, *A. Br.*
linicola, *C. C. Gmel.*
longicilia, *Otth.*
maritima, *With.*
melandrioides, *Lange.*
monachorum, *Vis.*
Muscipula, *L.*
nocteolens, *Webb. & Berth.*
noctiflora, *L.*
nocturna, *L.*

Silene, *cont.*
nutans, *L.*
obtusifolia, *Willd.*
odontopetala, *Fenzl.*
Otites, *Sm.*
paradoxa, *L.*
pendula, *L.*
rubella, *L.*
Sartori, *Boiss.*
Saxifraga, *L.*
Schafta, *Gmel.*
sedoides, *Jacq.*
squamigera, *Boiss.*
tatarica, *Pers.*
tenuis, *Willd.*
Thorei, *Duf.*
undulata, *Ait.*
vallesia, *L.*
verecunda, *S. Wats.*
vesiculifera, *J. Gay.*
wolgensis, *Bess.*
Zawadskii, *Herbich.*

Silphium integrifolium, *Michx.*
perfolatium, *L.*
scaberrimum, *Ell.*
trifoliatum, *L.*
— var. ternatum, *Retz.*

Silybum eburneum, *Coss. & Dur.*
Marianum, *Gaertn.*

Sisymbrium assoanum, *Losc. & Pard.*
austriacum, *Jacq.*
multifidum, *Willd.*
polyceratium, *L.*
Sophia, *L.*
strictissimum, *L.*
Thalianum, *F. Gay.*

Sisyrinchium grandiflorum, *Lindl.*
striatum, *Sm.*

Sium latifolium, *L.*
Sisarum, *L.*

Smilacina stellata, *Desf.*

Smyrnium apiifolium, *Willd.*
Olusatrum, *L.*
rotundifolium, *Mill.*

Solanum etuberosum, *Lindl.*
nigrum, *L.*
rostratum, *Dunal.*
villosum, *Willd.*

Solidago canadensis, *L.*
Drummondi, *Torr. & Gray.*
elliptica, *Ait.*
elongata, *Nutt.*
lithospermifolia, *Willd.*
neglecta, *Torr. & Gray.*
nemoralis, *Ait.*
serotina, *Ait.*
Shortii, *Torr. & Gray.*

Sonchus asper, *Hill.*
oleraceus, *L.*
palustris, *L.*

Sorghum vulgare, *Pers.*

Sparganium simplex, *Huds.*

Spartina polystachya, *Willd.*

Specularia falcata, *A.DC.*
hybrida, *A.DC.*
pentagonia, *A.DC.*
perfoliata, *A.DC.*
Speculum, *A.DC.*

Spergula arvensis, *L.*

Sphaeralcea rivularis, *Torr.*

Spilanthes Acmella, *Murr.*

Spinacea oleracea, *L.*

Spiraea Aruncus, *L.*
Filipendula, *L.*
Ulmaria, *L.*

Stachys alpina, *L.*
annua, *L.*
Betonica, *Benth.*
grandiflora, *Benth.*
graeca, *Boiss. & Heldr.*
lanata, *Jacq.*
longifolia, *Benth.*
recta, *L.*
setifera, *C. A. Mey.*
sylvatica, *L.*

Statice bellidifolia, *Gouan.*
Bonduelli, *Lestib.*
cosyrensis, *Guss.*
echioides, *L.*
eximia, *Schrenk.*
globulariaefolia, *Desf.*

Statice, *cont.*
gougetiana, *Girard.*
incana, *L.* var. nana.
Limonium, *L.*
sinensis, *Girard.*
sinuata, *L.*
speciosa, *L.*
Suworowi, *Regel.*

Stevia Eupatoria, *Willd.*
serrata, *Cav.*

Stipa Aristella, *L.*
arundinacea, *Benth.*
Calamagrostis, *Wahlenb.*
capillata, *L.*
papposa, *Nees.*
pennata, *L.*
sibirica, *Lam.*
spartea, *Trin.*
splendens, *Trin.*
viridula, *Trin.*

Stropholirion californicum, *Torr.*

Symphyandra Hofmanni, *Pant.*
pendula, *A.DC.*
Wanneri, *Heuff.*

Symphytum officinale, *L.*
peregrinum, *Ledeb.*

Synthyris reniformis, *Benth.*

Syrenia sessilifolia, *Ledeb.*

Tagetes erecta, *L.*
patula, *L.*

Talinum crassifolium, *Willd.*

Tamus communis, *L.*

Tanacetum vulgare, *L.*

Taraxacum gymnanthum, *DC.*
officinale, *Weber.*

Telephium Imperati, *L.*

Tellima grandiflora, *R. Br.*

Tetragonia crystallina, *L'Hérit.*
expansa, *Murr.*

Teucrium Arduini, *L.*
Botrys, L.
canadense, *L.*
Chamaedrys, *L.*

Teucrium, *cont.*
graecum, *Velak.*
multiflorum, *L.*
Scorodonia, *L.*

Thalictrum angustifolium, *L.*
aquilegiifolium, *L.*
corynellum, *DC.*
glaucum, *Desf.*
minus, *L.*
—var. collinum, (*Wallr.*)
—var. elatum, (*Jacq.*).
—var.pubescens,(*Schleich.*).
— var. purpurascens, (*Georgi*).
odoratum, *Gren. & Godr.*
squarrosum, *Stephan.*

Thelesperma filifolium,*A. Gray.*

Thermopsis caroliniana, *M. A. Curtis.*

Thladiantha dubia, *Bunge.*

Thlaspi arvense, *L.*
perfoliatum, *L.*

Thymus Chamaedrys, *Fries.*
var. comosus, (*Heuff.*).

Tinantia fugax, *Scheidw.*

Tolmiea Menziesii, *Torr. & Gray.*

Tolpis barbata, *Gaertn.*

Tordylium cordatum, *Poir.*

Trachymene coerulea, *R. Grah.*
pilosa, *Sm.*

Tradescantia congesta, *Penny.*
virginiana, *L.*

Tragopogon major, *L.*

Tragus racemosus, *Hall.*

Tribulus terrestris, *L.*

Tricholepis furcata, *DC.*

Tridax trilobata, *Hemsl.*

Trifolium agrarium, *L.*
alpestre. *L.*
angustifolium, *L.*
armenium, *Willd.*
arvense, *L.*

Trifolium, *cont.*
Balansae, *Boiss.*
clypeatum, *L.*
diffusum, *Ehrh.*
filiforme, *L.*
fragiferum, *L.*
glomeratum, *L.*
hybridum, *L.*
incarnatum, *L.*
leucanthum, *Bieb.*
Lupinaster, *L.*
maritimum, *Huds.*
medium, *L.*
multistriatum, *Koch.*
pannonicum, *L.*
Perreymondi, *Gren. & Godr.*
physodes, *Stev.*
pratense, *L.*
roscidum, *Greene.*
repens, *L.*
resupinatum, *L.*
rubens, *L.*
spumosum, *L.*
stellatum, *L.*
striatum, *L.*
tridentatum, *Lindl.*

Triglochin maritimum, *L.*
palustre, *L.*

Trigonella corniculata, *L.*
caerulea, *Ser.*
cretica, *Boiss.*
Foenum-graecum, *L.*
ovalis, *Boiss.*
polycerata, *L.*
suavissima, *Lindl.*

Trillium grandiflorum, *Salisb.*

Trinia Kitaibeli, *Bieb.*

Triosteum perfoliatum, *L.*

Tripteris cheiranthifolia, *Schultz.*

Triptostegia glandulosa, *Wall.*

Triticum Aegilops, *Beauv.*
amyleum, *Ser.*
monococcum, *L.*
ovatum, *Gren. & Godr.*
Spelta, *L.*
violaceum, *Hornem.*
vulgare, *Vill.*

Tritonia crocosmaeflora, *Hort.*
Pottsii, *Benth.*

Trollius europaeus, *L.*

Tropaeolum aduncum, *Sm.*
majus, *L.*
minus, *L.*

Troximon grandiflorum, *A. Gray.*
laciniatum, *A. Gray.*

Tunica olympica, *Boiss.*
prolifera, *Scop.*
Saxifraga, *Scop.*

Tussilago Farfara, *L.*

Typha angustifolia, *L.*
latifolia, *L.*
stenophylla, *Fisch. & Mey.*

Uniola latifolia, *Michx.*

Urospermum picroides, *Desf.*

Ursinia pulchra, *N. E. Br.*

Urtica pilulifera, *L.*
— var. balearica, (*L.*).
thunbergiana, *Sieb. & Zucc.*

Valeriana officinalis, *L.*
— var. sambucifolia, (*Mikan*).
Phu, *L.*

Valerianella carinata, *Loisel.*
coronata, *DC.*
dentata, *Poll.*
echinata, *DC.*
eriocarpa, *Desv.*
olitoria, *Poll.*
vesicaria, *Moench.*

Velezia rigida, *L.*

Venidium fugax, *Harv.*
perfoliatum, *Less.*

Veratrum nigrum, *L.*
viride, *Ait.*

Verbascum Lychnitis, *L.*
nigrum, *L.*
olympicum, *Boiss.*
phlomoides, *L.*
pulverulentum, *Vill.*

Verbena angustifolia, *Michx.*
Aubletia, *L.*
biserrata, *H. B. & K.*
bonariensis, *L.*
caroliniana, *Michx.*
officinalis, *L.*
urticifolia, *L.*

Verbesina encelioides, *Benth. & Hook. f.*
helianthoides, *Michx.*

Veronica Anagallis, *L.*
anagalloides, *Guss.*
Beccabunga, *L.*
Chamaedrys, *L.*
exaltata, *Maud.*
glauca, *Sibth. & Sm.*
incana, *L.*
longifolia, *L.*
officinalis, *L.*
persica, *Poir.*
saxatilis, *Scop.*
serpyllifolia, *L.*
spicata, *L.*
Teucrium, *L.* var. dubia, (*Chaix*).
virginica, *L.*

Vicia atropurpurea, *Desf.*
bithynica, *L.*
calcarata, *Desf.*
Cracca, *L.*
disperma, *DC.*
Faba, *L.*
— var. equina, (*Steud.*).
fulgens, *Batand.*
gigantea, *Hook.*
graminea, *Sm.*
hirsuta, *S. F. Gray.*
lutea, *L.*
melanops, *Sibth. & Sm.*
narbonensis, *L.*
Orobus, *DC.*
sativa, *L.*
sepium, *L.*
sicula, *Guss.*
sylvatica, *L.*
Vicia, *cont.*
unijuga, *A. Braun.*
villosa, *Roth.*

Vincetoxicum fuscatum, *Reichb. f.*
nigrum, *Moench.*
officinale, *Moench.*

Viola cornuta, *L.*
cucullata, *Ait.*
elatior, *Fries.*
hirta, *L.*
lutea, *Huds.*
mirabilis, *L.*
odorata, *L.*
palustris, *L.*
pratensis, *Mert. & Koch.*
rothomagensis, *Desf.*
striata, *Ait.*
sylvestris, *Lam.*
syrtica, *Siind.*
tricolor, *L.*

Volutarella Lippii, *Cass.*
muricata, *Benth. & Hook. f.*

Wahlenbergia dalmatica, *A. DC.*
gracilis, *A. DC.*
Kitaibelii, *A. DC.*
lobelioides, *Link.*
serpyllifolia, *Hort. Kew.*

Wulfenia carinthiaca, *Jacq.*

Xanthium spinosum, *L.*
strumarium, *L.*

Xanthocephalum gymnospermoides, *Benth. & Hook. f.*

Xeranthemum annuum, *L.*

Zauschneria californica, *Presl.*

Zea Mays, *L.*

Zinnia haageana, *Regel.*

Ziziphora tenuior, *L.*

Zygadenus elegans, *Pursh.*

TREES AND SHRUBS.

Abies amabilis, *Forbes.*
balsamea, *Mill.*
cephalonica, *Loudon.*
concolor, *Lindl. & Gordon.*
Fraseri, *Lindl.*
grandis, *Lindl.*
lasiocarpa, *Hook.*
numidica, *De Lannoy.*
sibirica, *Ledeb.*

Acer campestre, *L.*
— var. aetnense.
— var. collinum, *Wallr.*
caudatum, *Wall.*
circinatum, *Pursh.*
coriaceum, *Tausch.*
Heldreichi, *Orph.*
hyrcanum, *Fisch. & Mey.*
insigne, *Boiss. & Buhse.*
japonicum, *Thunbg.*
macrophyllum, *Pursh.*
micranthum, *Sieb. & Zucc.*
monspessulanum, *L.*
Negundo, *L.*
— var. violaceum.
opulifolium, *Vill.*
— var. neapolitanum.
pennsylvanicum, *L.*
platanoides, *L.*
Pseudo-Platanus, *L.*
— var. purpureum.
spicatum, *L.*
tataricum, *L.*
— var. Ginnala.

Ailanthus glandulosa, *Desf.*

Alnus cordifolia, *Tenore.*
glutinosa, *Gaertn.*
incana, *Willd.*
japonica, *Sieb. & Zucc.*
nitida, *Endl.*
oregona, *Nutt.*
orientalis, *Decne.*
rhombifolia, *Nutt.*
serrulata, *Willd.*
subcordata, *C. A. Mey.*
viridis, *DC.*

Amelanchier alnifolia, *Nutt.*
canadensis, *Torr. & Gray.*
vulgaris, *Moench.*

Amorpha canescens, *Nutt.*
fruticosa, *L.*

Andromeda polifolia, *L.*

Aplopappus ericoides, *DC.*

Aralia chinensis, *L.* var. canescens.
— var. spinosa, *L.*

Arbutus Andrachne, *L.*

Aucuba japonica, *Thunb.*

Berberis Aquifolium, *Pursh.*
— var. fascicularis, *Nichols.*
— var. murrayana, *Hort.*
aristata, *DC.*
buxifolia, *Lam.*
canadensis, *Pursh.*
concinna, *Hook. f.*
Darwinii, *Hook.*
Lycium, *Royle.*
repens, *Lindl.*
sinensis, *Desf.*
Thunbergi, *DC.*
virescens, *Hook. f.*
vulgaris, *L.*
— var. foliis purpureis.

Betula alba, *L.*
— var. pubescens, *Loud.*
alpestris, *Fries.*
corylifolia, *Regel & Maxim.*
davurica, *Pall.*
Ermani, *Cham.*
fruticosa, *Pall.*
humilis, *Schrenk.*
lenta, *L.*
lutea, *Michx.*
nigra, *L.*
occidentalis, *Hook.*
papyrifera, *Marsh.*
populifolia, *Marsh.*
ulmifolia, *Sieb. & Zucc.*
utilis, *D. Don.*

Bruckenthalia spiculifolia, *Reichb.*

Buddleia intermedia, *Carr.*
japonica, *Hemsl.*
variabilis, *Hemsl.*

Buxus sempervirens, *L.*
— var. latifolia.
— var. prostrata.

Calluna vulgaris, *Salisb.*

Calycanthus occidentalis, *Hook. & Arn.*

Caragana arborescens, *Lam.*
— var. Redowskii.
aurantiaca, *Koehne.*
brevispina, *Royle.*
frutescens, *DC.*
microphylla, *Lam.*
pygmaea, *DC.*

Carmichaelia australis, *R. Br.*

Carpinus Betulus, *L.*
— var. incisa.
caroliniana, *Walt.*
orientalis, *Mill.*

Cassandra calyculata, *D. Don.*

Cassinia fulvida, *Hook. f.*
leptophylla, *Hort.*

Catalpa cordifolia, *Jaume.*

Ceanothus americanus, *L.*
Arnoldi, *Hort.*
Fendleri, *A. Gray.*
grandiflorus, *Hort.*
integerrimus, *Hk. & Arn.*
ovatus, *Desf.*
velutinus, *Dougl.*

Cedrus Deodara, *Loud.*
Libani, *Loud.*

Celastrus articulatus, *Thunb.*

Celtis australis, *L.*
occidentalis, *L.*
Tournefortii, *Lam.*

Cercis Siliquastrum, *L.*

Chionanthus virginica, *L.*

Cistus corbariensis, *Pourr.*
hirsutus, *Lam.*
laurifolius, *L.*

Cistus, *cont.*
salvifolius, *L.*
vaginatus, *Ait.*
villosus, *L.*

Cladrastis amurensis, *Benth.*
— var. Buergeri.

Clematis aethusifolia, *Turcz.*
alpina, *Mill.*
campaniflora, *Brot.*
crispa, *L.*
Flammula, *L.*
fusca, *Turcz.*
Hendersonii, *Chandl.*
lanuginosa, *Lindl.*
montana, *Wall.*
orientalis, *L.*
— var. tangutica,
Pitcheri, *Torr. & Gray.* var. lasiostylis.
songarica, *Bunge.*
Viorna, *L.*
virginiana, *L.*
Vitalba, *L.*
Viticella, *L.* var. alba.
— var. rubra.

Clerodendron trichotomum, *Thunb.*

Clethra acuminata, *Michx.*
alnifolia, *L.*

Colutea arborescens, *L.*
cruenta, *Ait.*
istria, *Mill.*
melanocalyx, *Boiss.*

Conyza ivaefolia, *Less.*

Coriaria japonica, *A. Gray.*
terminalis, *Hemsl.*

Cornus alba, *L.*
alternifolia, *L. f.*
Amomum, *Mill.*
Baileyi, *Coult. & Evans.*
candidissima. *Marsh.*
circinata, *L'Herit.*
florida, *L.*
glabrata, *Benth.*
Kousa, *Buerg.*
Mas, *L.*
pubescens, *Nutt.*
sanguinea, *L.*
stolonifera, *Michx.*

Coronilla Emerus, *L.*

Cotoneaster acuminata, *Lindl.*
affinis, *Lindl.*
bacillaris, *Wall.*
— var. floribunda, *Hort.*
buxifolia, *Wall.*
frigida, *Wall.*
horizontalis, *Decne.*
integerrima, *Medic.*
laxiflora, *Jacq.*
lucida, *Schlecht.*
microphylla, *Wall.*
multiflora, *Bunge.*
Nummularia, *Fisch. & Mey.*
pannosa, *Franch.*
rotundifolia, *Wall.*
Simonsii, *Baker.*
thymifolia, *Baker.*

Crataegus Carrierei, *Vauvel.*
coccinea, *L.*
—var. macracantha, *Dudley.*
cordata, *Ait.*
Crus-Galli, *L.*
— var. splendens, *Lodd.*
Douglasii, *Lindl.*
flava, *Ait.*
heterophylla, *Fluegg.*
hiemalis, *Lange.*
melanocarpa, *Bieb.*
mollis, *Scheele.*
monogyna, *Jacq.*
nigra, *Waldst. & Kit.*
orientalis, *Pall.*
— var. sanguinea.
oxyacanthoides, *Thuill.*
— var. fructu luteo.
pentagyna, *Kit.*
pinnatifida, *Bunge.*
punctata, *Jacq.*
Pyracantha, *Pers.*
rivularis, *Nutt.*
sanguinea, *Pall.*
— var. songarica.
sorbifolia, *Lange.*
tanacetifolia, *Pers.*
tomentosa, *L.*
uniflora, *Muenchh.*
viridis, *L.*

Cupressus lawsoniana, *Murr.*
macrocarpa, *Hartw.*
obtusa, *C. Koch.*
Cupressus, *cont.*
pisifera, *C. Koch.*
thyoides, *L.*

Cytisus albus, *L.*
biflorus, *L'Hérit.*
capitatus, *Jacq.*
frivaldskyanus, *Degen.*
monspessulanus, *L.*
nigricans, *L.*
praecox, *Hort.*
purgans, *Boiss.*
purpureus, *Scop.*
scoparius, *L.*
— var. andreanus.
— var. pendulus.
— var. sulphureus.
sessilifolius, *L.*

Daboëcia polifolia, *D. Don.*

Daphne Mezereum, *L.*

Desmodium viridiflorum, *Beck.*

Deutzia crenata, *Sieb. & Zucc.*

Diervilla hortensis, *Sieb. & Zucc.*
sessilifolia, *Buckl.*
— var. splendens.

Diospyros virginiana, *L.*

Dirca palustris, *L.*

Eccremocarpus scaber, *Ruiz & Pav.*

Elaeagnus angustifolia, *L.*
argentea, *Pursh.*
multiflora, *Thunb.*
umbellata, *Thunb.*

Erica arborea, *L.*
ciliaris, *L.*
cinerea, *L.*
mediterranea, *L.*
multiflora, *L.*
scoparia, *L.*
stricta, *Donn.*
vagans, *L.*

Escallonia exoniensis, *Hort.*
punctata, *DC.*
rubra, *Pers.*

Euonymus europaeus, *L.*
latifolius, *Scop.*
thunbergianus, *Blume.*

Exochorda Alberti, *Regel.*

Fontanesia Fortunei, *Carrière.*
phillireoides, *Labill.*

Fothergilla Gardeni, *Murr.*

Fraxinus americana, *L.*
Excelsior, *L.*
— var. heterophylla, *Loud.*
nigra, *Marsh.*
Ornus, *L.*

Gaultheria Shallon, *Pursh.*

Gaylussacia resinosa, *Torr. & Gray.*

Genista aethnensis, *DC.*
anglica, *L.*
cinerea, *DC.*
germanica, *L.*
hispanica, *L.*
pilosa, *L.*
sagittalis, *L.*
tinctoria, *L.* var. elatior.
virgata, *DC.*

Halesia corymbosa, *Nichols.*
tetraptera, *L.*

Hedera Helix, *L.*

Hedysarum multijugum, *Maxim.*

Helianthemum canum, *Dunal.*
formosum, *Dunal.*
halimifolium, *Willk.*
hirtum, *Mill.*
polifolium, *Pers.*
vulgare, *Gaertn.*
— var. mutabile.
— var. rhodanthum.

Hippophaë rhamnoides, *L.*

Hydrangea arborescens, *L.*
paniculata, *Sieb. & Zucc.*
petiolaris, *Sieb. & Zucc.*
pubescens, *Decne.*
radiata, *Walt.*

Hypericum Androsaemum, *L.*
Ascyron, *L.*
aureum, *Bartr.*
calycinum, *L.*
corymbosum, *Muhl.*
densiflorum, *Pursh.*
elatum, *Ait.*
erectum, *Thunb.*
hircinum, *L.*
hookerianum, *Wight & Arn.*
inodorum, *Jacq.*
kalmianum, *L.*
moserianum, *André.*
olympicum, *L.*
patulum, *Thunb.*
prolificum, *L.*

Ilex Aquifolium, *L.*
cornuta, *Lindl. & Baxt.*
decidua, *Walt.*
glabra, *A. Gray.*
opaca, *Ait.*
Sieboldii, *Miq.*
— var. ructu luteo.
verticillata, *A. Gray.*
— var. fructu luteo.

Indigofera gerardiana, *Wall.*
hebepetala, *Benth.*

Jamesia americana, *Torr. & Gray.*

Jasminum fruticans, *L.*
humile, *L.*

Juniperus chinensis, *L.*
communis, *L.*
excelsa, *Bieb.*

Kalmia angustifolia, *L.*
glauca, *Ait.*
latifolia, *L.*

Laburnum alpinum, *J. S. Presl.*
— var. biferum, *Hort.*
vulgare, *J. S. Presl.*

Larix europaea, *DC.*
— var. sibirica, *Beissn.*
leptolepis, *Endl.*
occidentalis, *Nutt.*

Ledum latifolium, *Ait.*
palustre, *L.*

Lespedeza bicolor, *Turcz.*

Leucothoe racemosa, *A. Gray.*

Leycesteria formosa, *Wall.*

Ligustrum Ibota, *Sieb.*
sinense, *Lour.*
vulgare, *L.*

Lonicera alpigena, *L.*
angustifolia, *Wall.*
depressa, *Royle.*
glauca, *Hill.*
hirsuta, *Eaton.*
japonica, *Thunb.*
Korolkowii, *Stapf.*
Morrowii, *A. Gray.*
nigra, *L.*
orientalis, *Lam.*
Periclymenum, *L.*
segreziensis, *Lavall.*
Sullivantii, *A. Gray.*
syringantha, *Maxim.*
translucens, *Carr.*
Xylosteum, *L.*

Lupinus arboreus, *L.*

Lycium grevilleanam, *Gillies.*

Lyonia paniculata, *Nutt.*

Magnolia Kobus, *DC.*
macrophylla, *Michx.*
soulangeana, *Hort.*
tripetala, *L.*

Menispermum canadense, *L.*

Microglossa albescens, *C. B. Clarke.*

Morus nigra, *L.*

Myrica californica, *Cham. & Schlecht.*
carolinensis, *Miller.*
cerifera, *L.*
Gale, *L.*

Myricaria germanica, *Desv.*

Neillia amurensis, *Benth. & Hook. f.*
opulifolia, *Benth. & Hook. f.*

Olearia Haastii, *Hook. f.*
macrodonta, *Baker.*

Ononis aragonensis, *Asso.*
rotundifolia, *L.*

Pernettya mucronata, *Gaudich.*

Petteria ramentacea, *Presl.*

Philadelphus acuminatus, *Lange.*
Billardi, *Koehne.*
coronarius, *L.*
— var. tomentosus, *Hook. f. & Thoms.*
gordonianus, *Lindl.*
grandiflorus, *Willd.*
Lemoinei, *Hort.*
Lewisii, *Pursh.*
Satsumi, *Sieb.*

Picea alba, *Link.*

Pieris japonica, *D. Don.*
mariana, *Benth. & Hook. f.*
nitida, *Benth. & Hook. f.*

Pinus albicaulis, *Engelm.*
Jeffreyi, *A. Murr.*
Laricio, *Poir.*
— var. monspeliensis.
mitis, *Michx.*
monophylla, *Torr.*
parviflora. *Sieb. & Zucc.*
Peuke, *Griseb.*
ponderosa, *Dougl.*
Sabiniana, *Dougl.*
Taeda, *L.*

Piptanthus nepalensis, *Sweet.*

Platanus acerifolia, *Willd.*
occidentalis, *L.*
orientalis, *L.*

Populus deltoidea, *Marsh.*
nigra, *L.*
Sieboldii, *Miq.*

Potentilla fruticosa, *L.*
salesoviana, *Steph,*

Prunus acida, *Borkh.* var. semperflorens.
alleghaniensis, *Porter.*
americana, *Marsh.*
Besseyi, *Bailey.*
Brigantiaca, *Chair.*
Capollin, *Zucc.*
cerasifera, *Ehrh.*
demissa, *Walp.*
divaricata, *Ledeb.*
Laurocerasus, *L.*
lusitanica, *L. f.*
Mahaleb, *L.*
maritima, *Wangenh.*
nigra, *Ait.*
Padus, *L.*
Puddum, *Roxb.*
serotina, *Ehrh.*
spinosa, *L.*

Ptelea trifoliata, *L.*

Pyrus alnifolia, *Franch. & Savat.*
alpina, *Willd.*
americana, *DC.*
arbutifolia, *L.*
Aria, *L.*
— var. Hostii.
Aucuparia, *Gaertn.*
baccata, *L.*
Balansae, *Decne.*
canescens, *Spach.*
communis, *L.*
coronaria, *L.*
Cydonia, *L.*
decaisneana, *Nichols.*
floribunda, *Nichols.*
germanica, *Hook. f.*
intermedia, *Ehrh.*
japonica, *Thunb.*
lanata, *D. Don.*
lanuginosa, *DC.*
lobata, *Nichols.*
longipes, *Coss. & Durieu.*
Maulei, *Mast.*
Michauxi, *Bosc.*
nigra, *Sargent.*
nivalis, *Jacq.*
parviflora, *Desf.*
pinnatifida, *Ehrh.*
prunifolia, *Willd.*
Ringo, *Maxim.*
rotundifolia, *Bechst.*
Pyrus, *cont.*
salicifolia, *L.*
Schiedeckeri, *Hort.*
sikkimensis, *Hook. f.*
sinaica, *Thouin.*
sinensis, *Lindl.*
Sorbus, *Gaertn.*
spuria, *DC.*
Toringo, *Sieb.*

Rhamnus Alaternus, *L.*
— var. angustifolius.
californicus, *Eschsch.*
catharticus, *L.*
davuricus, *Pall.*
Frangula, *L.*
libanoticus, *Boiss.*
purshianus, *DC.*

Rhododendron Albrechtii, *Maxim.*
catawbiense, *Michx.*
ferrugineum, *L.*
flavum, *G. Don.*
kewense, *W. Wats.*
ponticum, *L.*
— var. cheiranthifolium.
— var. lancifolium.
punctatum, *Andr.*
quinquefolium, *Bisset & S. Moore.*

Rhodotypus kerrioides, *Sieb. & Zucc.*

Rhus aromatica, *L.*
Cotinus, *L.*
glabra, *L.*
— var. laciniata, *Carr.*
Osbeckii, *DC.*
Toxicodendron, *L.*
typhina, *L.*

Ribes alpinum, *L.*
— var. pumilum, *Hort.*
aureum, *Pursh.*
— var. aurantiacum minus, *Hort.*
— var. tenuiflorum, *Torr.*
bracteosum, *Dougl.*
cereum, *Dougl.*
divaricatum, *Dougl.*
fasciculatum, *Sieb. & Zucc.*

Ribes, *cont.*
gracile, *Michx.*
Menziesii, *Pursh.*
multiflorum, *Waldst. & Kit.*
petraeum, *Wulf.*
robustum, *Hort.*
rubrum, *L.*
— var. Schlechtendalii.
sanguineum, *Pursh.*

Robinia neo-mexicana, *A. Gray.*
Pseudacacia, *L.*
viscosa, *Vent.*

Rosa acicularis, *Lindl.*
agrestis, *Savi.*
alba, *L.*
alpina, *L.*
— var. pyrenaica, *Gouan.*
arkansana, *Porter.*
beggeriana, *Schrenk.*
blanda, *Ait.*
californica, *C. & S.*
canina, *L.*
carolina, *L.*
— var. nuttalliana.
cinnamomea, *L.*
— var. glandulifolia.
damascena, *Mill.*
Fendleri, *Crépin.*
ferox, *Bieb.*
ferruginea, *Vill.*
foliolosa, *Nutt.*
gallica, *L.*
gymnocarpa, *Nutt.*
hibernica, *Sm.*
humilis, *Marsh.*
— var. triloba.
involuta, *Sm.* var. Wilsoni, *Baker.*
Jundzilli, *Besser.*
macrophylla, *Lindl.*
Malyi, *Kerner.*
micrantha, *Sm.*
microphylla, *Roxb.*
mollis, *Sm.*
moschata, *Mill.*
multiflora, *Thunb.*
nipponensis, *Crépin.*
nitida, *Willd.*
nutkana, *Presl.*
ochroleuca, *Sw.*
pisocarpa, *A. Gray.*
pomifera, *Herrm.*

Rosa, *cont.*
repens, *Scop.*
rubella, *Sm.*
rubiginosa, *L.*
rugosa, *Sieb. & Zucc.*
Sayi, *Schwein.*
Seraphinii, *Viv.*
sericea, *Lindl.*
setigera, *Michx.*
spinosissima, *L.*
— var. altaica.
— var. hispida, *Baker.*
stylosa, *Desv.*
tomentosa, *Sm.*
virginiana, *Mill.*
— var. alba.
— var. grandiflora.
webbiana, *Wall.*
wichuraiana, *Crépin.*

Rubus affinis, *Weihe & Nees.*
balfourianus, *Blox.*
Bellardii, *Weihe.*
biflorus, *Buch.-Ham.*
caesius, *L.*
Colemani, *Blox.*
corylifolius, *Sm.*
crataegifolius, *Bunge.*
deliciosus, *James.*
dumetorum, *Weihe & Nees.*
echinatus, *Lindl.*
erythrinus, *Genev.*
exsecatus, *Muell.*
foliolosus, *D. Don.*
fuscus, *Weihe & Nees.*
glandulosus, *Bell.*
Guentheri, *Weihe & Nees.*
hystrix, *Weihe & Nees.*
Idaeus, *L.*
Koehleri, *Weihe.*
laciniatus, *Willd.*
leucodermis, *Dougl.*
leucostachys, *Sm.*
lindleyanus, *Lees.*
longithyrsiger, *Lees.*
macrophyllus, *Weihe & Nees.*
melanolasius, *Focke.*
micans, *Gren. & Godr.*
mucronatus, *Blox.*
mutabilis, *Genev.*
neglectus, *Peck.*
nutkanus, *Moç.*
occidentalis, *L.*
odoratus, *L.*

Rubus, *cont.*
parvifolius, *L.*
phoenicolasius, *Maxim.*
pubescens, *Auct. Angl.*
Purchasi, *Blox.*
Radula, *Weihe.*
ramosus, *Blox.*
rhamnifolius, *Weihe & Nees.*
scaber, *Weihe & Nees.*
suberectus, *Anders.*
thyrsiflorus, *Weihe & Nees.*
thyrsoideus, *Wimm.*
ulmifolius, *Schott.*
— var. leucocarpus.
villicaulis, *Koehl.*
villosus, *Ait.*

Ruta graveolens, *L.*

Salix ambigua, *Ehrh.*
Caprea, *L.*
cinerea-repens, *Willd.*
myrtilloides, *L.*
— var. pedicellaris, *Anderss.*
rubra, *Huds.*
smithiana, *Willd.*

Sambucus canadensis, *L.*
glauca, *Nutt.*
melanocarpa, *A. Gray.*
nigra, *L.*
racemosa, *L.*
— var. serratifolia.

Sassafras officinale, *Nees.*

Smilax rotundifolia, *L.*

Spartium junceum, *L.*

Spiraea Aitchisoni, *Hemsl.*
betulifolia, *Pall.*
bracteata, *Zabel.*
canescens, *D. Don.*
chamaedrifolia, *L.*
discolor, *Pursh.*
Douglasii, *Hook.*
japonica, *L. f.*
— var. glabrata, *Nichols.*
lindleyana, *Wall.*
nobleana, *Hook.*
notha, *Zabel.*
nudiflora, *Zabel.*
salicifolia, *L.*
sorbifolia, *L.*
tomentosa, *L.*

Staphylea colchica, *Stev.*
pinnata, *L.*

Symphoricarpus Heyeri, *Dippel.*
mollis, *Nutt.* var. ciliatus, *Nutt.*
racemosus, *Michx.*
rotundifolius, *A. Gray.*

Syringa Emodi, *Wall.*
— var. rosea, *Cornu.*
japonica, *Decne.*
Josikaea, *Jacq. f.*
vulgaris, *L.*

Tamarix anglica, *Webb.*
Pallasii, *Desv.*
tetrandra, *Pall.*

Taxus baccata, *L.*
cuspidata, *Sieb. & Zucc.*

Thuja gigantea, *Nutt.*
japonica, *Maxim.*
occidentalis, *L.*
— var. Dicksoni.
orientalis, *L.*

Tilia argentea, *Desf.*
cordata, *Mill.*
petiolaris, *DC.*
platyphyllos, *Scop.*
vulgaris, *Hayne.*

Tsuga pattoniana, *Engelm.*
— var. glauca.

Ulex europaeus, *L.*
nanus, *Forst.*

Vaccinium corymbosum, *L.*
hirsutum, *Buckl.*
ovatum, *Pursh.*
pensylvanicum, *Lam.*
stamineum, *L.*

Veronica Traversii, *Hook. f.*

Viburnum acerifolium, *L.*
cassinoides, *L.*
dentatum, *L.*
dilatatum, *Thunb.*
Lantana, *L.*
Lentago, *L.*
molle, *Michx.*
nudum, *L.*
Opulus, *L.*
phlebotrichum, *Sieb. & Zucc.*
Tinus, *L.*

Vitis aestivalis, *Michx.*
heterophylla, *Thunb.*
himalayana, *Brand.*
quinquefolia, *Lam.*
serianaefolia, *Maxim.*
vinifera, *L.*
— var. laciniosa.

Widdringtonia Whytei, *Rendle.*

Zanthoxylum Bungei, *Planch.*

Zenobia speciosa, *D. Don.*
— var. pulverulenta.

ROYAL GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

APPENDIX II.—1901.

NOTE.

In the preface to the *Catalogue of the Library of the Royal Botanic Gardens*, which was issued as Volume III. of the *Additional Series* of the *Kew Bulletin*, it was stated that annual lists of future additions would be published in the *Bulletin*.

The present instalment contains the additions made to the Library by gift or purchase during the year 1900, with the exception of such current periodicals and annuals as continue sets already catalogued.

Like the Catalogue, the List is printed on one side of the page, to allow of its being cut up. It is probable that many persons and institutions will make the Kew Catalogue the basis of their own, and will use the lists of additions to supply printed slips for fresh titles.

8168—1375—2/1901 Wt 81 D & S 29

CATALOGUE OF THE LIBRARY.

Additions received during 1900.

§ 1.—GENERAL.

Acharius, Erik. Lichenographiae Sueciae prodromus. Lincopiae, 1798 8vo.

—— Diss. de planta aphyteia . . . *praes.* C. von. LINNÉ. Upsaliae, 1776. 4to.

Adlers, Konrad August. *Resp.* See **Areschoug, J. E.** 1854.

Aengeln, Petrus van. Der verständige Gärtner, etc. Nun zum fünfftenmahl vermehrt und zum sechstenmahl Deutsch ausgefertiget von G. GREFLINGER. Hanover, 1673. 12mo.

Afzelius, Adam. De *Rosis* svecanis, 1–5, 10. Upsaliae, 1804–10. 4to. Tentamen 1. *resp.* C. STENHAMMAR, ib., 1804; 2. *resp.* J. J. RAEDBERG ib., 1805; 3. *resp.* D. E. NAEZEN, ib., 1806; 4. *resp.* G. A. DRAKENBERG, ib., 1807; 5. *resp.* A. A. AFZELIUS, ib., 1807; 10. *resp.* P. H. ODHNER, ib., 1810.

—— Reliquiae Afzelianae, sistentes icones fungorum, quos in Guinea collegit et in aere incisas excudi curavit A. AFZELIUS. Interpretatur E. M. FRIES. Upsaliae, 1860. fol.

Afzelius, Arvid August. *Resp.* See **Afzelius, A.** 1807.

Afzelius, Peter Conrad. Novitiae Florae Gotlandicae . . . *praes.* G. WAHLENBERG. 1 (all published). Upsaliae, 1844. 8vo.

Agardh, Jacob Georg. De *Pilularia.* Diss. . . . *Resp.* H. LECHE. Lundae, 1833. 8vo.

Agassiz, Alexander. See **Andrews, E. C.** 1900.

Ahlm, Gustaf. *Resp.* See **Areschoug, J. E.** 1854.

Albom, Sven Eric. *Resp.* Mus. nat. upsal., 19. See **Thunberg, C. P.** 1796.

Alguren, Sven. *Resp.* Mus. nat. upsal., 16. See **Thunberg, C. P.** 1794.

Allgulin, Johan Magnus. *Resp.* See **Retzius, A. J.** 1808.

Altahr, Knut Ludvig. *Resp.* Mus. nat. upsal., 33. See **Thunberg, C. P.** 1821.

Andersson, Nils Johan. *Catabrosa algida* Fr. Stockholm, 1849. 8vo.

Andrews, Charles W. See **Christmas Island.**

Andrews, E. C. Notes on the limestones and general Geology of the Fiji Islands, with special reference to the Lau group. Based upon surveys made for A. AGASSIZ. With an introductory note by A. AGASSIZ, and a preface by T. W. Edgeworth DAVID. (Bull. Mus. Compar. Zool. Harvard Coll., xxxviii.) Cambridge, Mass., 1900.

Angelius, Nicolaus, *Bucinensis.* *Begins:* Libri de re rustica a NICOLAO ANGELIO viro consumatissimo nuper maxima diligentia recogniti et typis excusi, cum indice & expositione omnium dictionum. CATONIS. VARRONIS. COLLUMELLÆ. PALLADII quæ aliqua enucleatione indigebant. *Colophon:* Impressum Florentiæ opera & impressa Phillipi JUNTÆ. 1515. sm. 4to.

Année biologique, L'. See **Delage, Y.**

Antwerp. Handelingen van het derde Vlaamsch Natuur—en Geneeskundig Congres gehouden te Antwerpen den 24 September, 1899. Antwerpen, 1899. 4to.

Arcangeli, Giovanni. Sulla tossicità del *Pleurotus olearius.* (Proc. Verb. Soc. Tosc. Sc. Nat. 1899.) [Pisa, 1899.] 8vo.

—— I principali funghi velenosi e mangerecci. [With illustrations.] Pisa, 1900. 8vo.

—— La festa degli alberi e gli orti botanici in Italia. (Bull. Soc. Bot. Ital. 1900.) [Firenze], (1900). 8vo.

Areschoug, Fredrik Wilhelm Christian. Revisio Cuscutarum Sueciae. Lundae, 1853. 8vo.

Areschoug, Johan Erhart. *Praes.* Dispositio muscorum frondosorum in Monte Kinnekulle nascentium, 1–4. Upsaliæ, 1854. 8vo. 1. *resp.* J. E. ZETTERSTEDT; 2. *resp.* E. G. BLOMBERG; 3. *resp.* C. A. ADLERS; 4. *resp.* G. E. AHLM.

Arnold, Ferdinand C. G. Zur Lichenenflora von München. Dritte Abtheilung. München, 1898 & 1900. 8vo.

Askelöf, Johan Chr. *Resp.* See **Retzius, A. J.** 1805.

Atlases. Map of China prepared for the China Inland Mission, 1899. [London, 1899.] fol.

Attfield, John. See **Pharmacopœia.**

Australia. Western Australian Year-book for 1893–94, by Malcolm A. C. FRASER. Perth, 1895. 8vo. —— 1898–99. Ib., 1900. 2 vols. 8vo.

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§ 2.—TRAVELS.

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[Oliver, Samuel Pasfield.] See **Pingré, A. G.**

Ortus Sanitatis. A copy of German origin, written in Latin, circa 1370–90. 138 ff. 4to.

Parker, George Williams. Catalogue of Plants from Guiana and adjacent countries. 1897–1900. fol.

Pingré, Alexandre Gui. Voyage à Rodrique, 1761. Copie d'un manuscrit . . . existant à la Bibliothèque du Service hydrographique de la Marine française. [With a biography of PINGRE by Samuel Pasfield OLIVER.] fol.

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ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

APPENDIX III.—1901.

NEW GARDEN PLANTS OF THE YEAR 1900.

The number of garden plants annually described in botanical and horticultural publications, both English and foreign, is now so considerable that it has been thought desirable to publish a complete list of them in the *Kew Bulletin* each year. The following list comprises all the new introductions recorded during 1900. These lists are indispensable to the maintenance of a correct nomenclature, especially in the smaller botanical establishments in correspondence with Kew, which are, as a rule, only scantily provided with horticultural periodicals. Such a list will also afford information respecting new plants under cultivation at this establishment, many of which will be distributed from it in the regular course of exchange with other botanic gardens.

The present list includes not only plants brought into cultivation for the first time during 1900, but the most noteworthy of those which have been re-introduced after being lost from cultivation. Other plants included in the list may have been in gardens for several years, but either were not described or their names had not been authenticated until recently.

In addition to species and well-marked varieties, hybrids, whether introduced or of garden origin, have been included where they have been described with formal botanical names. Mere cultural forms of well-known garden plants are omitted, for obvious reasons.

In every case the plant is cited under its published name, although some of the names are doubtfully correct. Where, however, a correction has appeared desirable, this is made.

The name of the person in whose collection the plant was first noticed or described is given where known.

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An asterisk is prefixed to all those plants of which examples are in cultivation at Kew.

The publications from which this list is compiled, with the abbreviations used to indicate them, are as follows :—*Bull. Mus. Paris.*—Bulletin du Muséum d'histoire naturelle, Paris. *B. M.*—Botanical Magazine. *Gard.*—The Garden. *G.C.*—Gardeners' Chronicle. *Gfl.*—Gartenflora. *G. M.*—Gardeners' Magazine. *Jard.*—Le Jardin. *Journ. de Bot.*—Journal de Botanique. *J. of H.*—Journal of Horticulture. *J. H. F.*—Journal de la Société nationale d'horticulture de France. *L.*—Lindenia. *Lemoine Cat.*—Lemoine, Catalogue. *M. K.*—Monatsschrift für Kakteenkunde. *N. B.*—Notizblatt des Königl. botanischen Gartens und Museums zu Berlin. *N. G. M.*—Dr. Neubert's Garten-Magazin. *O. R.*—Orchid Review. *R. H.*—Revue Horticole. *R. H. B.*—Revue de l'Horticulture Belge. *S. C. A. A.*—Southern California Acclimatizing Association Catalogue. *Späth Cat.*—L. Späth, General Nursery Catalogue. *S. H.*—La Semaine Horticole. *W. G.*—Wiener Illustrirte Garten-Zeitung.

The abbreviations in the descriptions of the plants are :—*diam.*—Diameter. *ft.*—Foot or Feet. *G.*—Greenhouse. *H.*—Hardy. *H. H.*—Half-hardy. *in.*—Inches. *S.*—Stove.

***Achillea lingulata buglossis.** (*Gard.* 1900, lvii, 485.) Compositæ. H. A form 1½-2 ft. high, bearing corymbs of white flowers. Europe. (T. Smith.)

Actinostemma paniculatum. (*J.H.F.* 1900, 123, f. 13.) Cucurbitaceæ. A hardy perennial with tuberous roots, palmate leaves. and inconspicuous flowers. A rapid grower, doing well in dry, barren spots. China. (Paris, B.G.)

***Adesmia boronioides.** (*B.M.* t. 7748.) Leguminosæ. H. A pretty shrub warted all over, except the petals and leaflets, with large balsamiferous glands. Leaves 1½ to 2 in. long, made up of from 10 to 13 pairs of sessile orbicular, coarsely crenate dark green leaflets. Flowers bright orange yellow in terminal racemes, Patagonia. (A. K. Bulley.)

Alsophila Baroumba. (*R.H.* 1900, 584.) Filices. S. "Not so elegant a species as *A. loubetiana*, but remarkable for its majestic dimensions." Congo Free State. (L'Horticole Coloniale, Brussels.)

Alsophila loubetiana. (*R.H.* 1900, 583 ; *S.H.* 1900, 453, f. 152 ; *G.C.* 1900, xxviii, 321, f. 100.) Filices. S. "A beautiful, decorative tree-fern with broad fronds, rachis hairy, brown." (L'Horticole Coloniale, Brussels.)

***Anemone cernua.** (*Gard.* 1900, lvii, 356.) Ranunculaceæ. H. A species with deeply-cut and divided leaves, the nodding flowers being of the colour of dragon's blood, silky outside. Japan. (Max Leichtlin, Baden.)

Anthurium andreanum Lawrenciæ. (*G.C.* 1900, xxvii. 370.) Araceæ. S. "Has exceedingly large spathes of pure white, and the spadix is nearly white also." (Sir Trevor Lawrence.)

Aplopappus eriocarpus. (*Gard.* 1900, lviii, 372.) Compositæ. H. A distinct perennial with greyish foliage and yellow flowers. N. America. (A. Perry.)

Aquilegia baikalensis. (*G.C.* 1900, xxvii, 407.) Ranunculaceæ. H. A species of dwarf habit, bearing flowers which in colour are a combination of blue, white, and green. (S. Arnott.)

Arctotis grandis. (*W.G.* 1900, 327, f. 28.) Compositæ. H. A handsome annual growing about two feet high, with white-felted pinnatifid leaves and heads of flowers about 3 in. across—upper surface of the ray-florets, white with a narrow yellow band at the base ; bright lilac beneath, disk, blue. South-west Africa. (Haage & Schmidt, Erfurt.)

***Ardisia brandueriana.** (*R.H.* 1900, 583; *G.C.* 1900, xxviii, 321, f. 98.) Myrsinaceæ. S. A dwarf species with dark green shaded leaves with crenulate margins. Congo Free State. (L'Horticole Coloniale, Brussels.)

***Arisæma flavum.** (*B.M.* t. 7700.) Araceæ. S. A very variable plant from 6 to 24 in. in height; leaves 4 to nearly 12 in. span; spathe 1 to 3 in. long, of a green to yellow colour. Himalaya. (Kew.)

***Asclepias Hallii.** (*G. C.* 1900, xxviii, 183, f. 53.) Asclepiadaceæ. H. A species near *A. princeps*, but with larger heads and flowers. California. (W. E. Gumbleton.)

Asparagus Duchesnei. (*R. H.* 1900, 583; *S. H.* 1900, 4161, 155; *G. C.* 1900, xxviii, 305, f. 92.) Liliaceæ. S. "Branches climbing, weeping, with falciform cladodes of a glossy green." Congo Free State. (L'Horticole Coloniale, Brussels.)

Aster brachytrichus. (*R. H.* 1900, 369, f. 172.) Compositæ. H. A dwarf perennial with yellow disk, and violet-blue ray-florets. Yunnan. (M. L. de Vilmorin.)

***Aster Fendlerii.** (*Gard.* 1900, lvii, 209.) H. A low-growing species, with narrow leaves and violet flowers. N. America.

***Aster foliosus.** (*Gard.* 1900, lviii, 372.) H. A. distinct species, with strong stems and large lilac-coloured flowers. Colorado. (A. Perry.) (This is evidently *A. foliaceus*.)

***Aster Fremonti.** (*Gard.* 1900, lvii, 475.) H. An early flowering dwarf plant, with soft pink flower-heads about 2 in. in diameter. Rocky Mountains. (Max Leichtlin, Baden.)

***Aster Porteri.** (*Gard.* 1900, lviii, 372.) H. A slender-growing species about 2½ ft. high, branching freely and producing numerous white flowers. N. America. (A. Perry.)

Atriplex Breweri. (*S. C. A. A. Cat.* 1900, 50.) Chenopodiaceæ. G. A shrub with greyish-green leaves, used for hedges in some parts of California. California.

***Bamburanta arnoldiana.** (*S. H.* 1900, 463, f. 156; *G. C.* 1900, xxviii, 313, f. 95.) Scitamineæ. S. An undetermined plant with *Maranta*-like leaves and *Bamboo*-like habit. Congo Free State. (L'Horticole Coloniale.)

***Bauhinia yunnanensis.** (*R. H.* 1900, 448.) Leguminosæ. G. A vigorous climber glabrous and glaucous in all its parts. Flowers, rosy-white striped with purple. Yunnan. (Paris B. G.)

***Begonia Augustinei.** (*G. C.* 1900, xxviii, 286.) Begoniaceæ. G. In habit and general appearance resembles *B. xanthina*, from which it differs in having rugose, rough, hairy leaves, and rose-pink flowers. China. (Kew.)

Begonia Heddei. (*Gfl.* 1900, t. 1470.) S. A tall-growing species of but little horticultural interest. Leaves, broadly-elliptical, pointed, green above, red beneath. Very near *B. Lehmbachii* from the Cameroons. German East Africa.

Begonia Feasti. (*S. H.* 1900, 84.) S. A garden hybrid between *B. hydrocotilifolia* and *B. manicata*.

Begonia Lehmbachii. (*Gfl.* 1900, t. 1476.) S. A new species of little horticultural value. Cameroons. (Berlin B. G.)

***Berberis Thunbergi minor.** (*Späth Cat.* 1900–1, 71.) Berberidaceæ. H. A dwarf form of the type. (Arnold Arboretum, Boston.)

Brasso-cattleya nivalis. (*J. H. F.* 1900, 54.) Orchidaceæ. S. A garden hybrid between *Brassavola fragrans* and *Cattleya intermedia*. (C. Maron, Brunoy, France.)

*** Bryophyllum crenatum.** (*R. H.* 1900, 175, f. 81, 362, t.) Crassulaceæ. S. A bushy succulent with oval crenate leaves and terminal cymes of long tubular yellowish flowers, calyx inflated, pale vinous red. Madagascar. (Puteaux, Versailles.)

Calanthe atrorubens. (*G. M.* 1900, 25.) Orchidaceæ. A garden hybrid between *C. bella* and *C. burfordiense*. (N. Cookson.)

***Calanthe madagascariensis.** (*G. C.* 1900, xxviii, 335.) S. Closely allied to *C. sylvatica*, which it resembles in general characters, differing chiefly in its smaller stature. Sepals and petals sub.-equal, rosy-mauve, and the lip is dull magenta with a white spot at the base. Madagascar. (Kew.)

*Calanthe Warpuri. (*G. C.* 1900, xxviii, 335.) S. Like the last-named species, a near ally of *C. sylvatica*. Flowers 1½ in. wide, the sepals ovate-acuminate, white, the petals much narrower, also white, and the lobed lip dull purple, changing finally to orange. Madagascar. (Kew.)

*Calendula noëana. (*G. C.* 1900, xxvii, 273.) Compositæ. H. An annual so much resembling the corn marigold (*Chrysanthemum segetum*) when in flower as to be readily mistaken for it; the achenes, however, are very different. Rumelia. (Spencer Moore.)

Campanula persicifolia Moerheimei. (*G.C.* 1900, xxvii, 409, 414, f. 135.) Campanulaceæ. H. A double variety with white flowers. (T. S. Ware.)

Campanula sulphurea. (*G. C.* 1900, xxviii, 168.) H. Annual, with flowers of the same size as the common harebell, pale straw colour on the outside, and sulphur yellow on the inside. Palestine. (A. K. Bulley.)

Cattleya Aclandiæ nigrescens. (*O. R.* 1900, 230.) Orchidaceæ. S A variety in which the sepals and petals are suffused with blackish-brown. (Sir F. Wigan.)

Cattleya dowiana jenseniana. (*O. R.* 1900, 286.) S. A very large and handsome form, having primrose yellow sepals and petals, with some purple marbling at the apex of the latter, and a rich claret purple lip covered with golden veining. (Ed. Kromer.)

Cattleya Elisabethæ. (*S. H.* 1900, 475.) S. A garden hybrid between *C. Mossiæ* and *C. schilleriana*. (L'Horticole Coloniale, Brussels.)

Cattleya elatior. (*O. R.* 1900, 28.) S. A garden hybrid between *C. schilleriana* and *C. Mossiæ reineckeana*. (C. L. N. Ingram.)

Cattleya goossensiana. (*O. R.* 1900, 119.) S. A garden hybrid between *C. schilleriana* and *C. gaskelliana*. (A. A. Peeters, Brussels.)

Cattleya Grayæ. (*O. R.* 1900, 214.) S. A garden hybrid between *C. granulosa* and *C. velutina*. (Sir F. Wigan.)

Cattleya illuminata. (*O. R.* 1900, 285.) S. A garden hybrid of unrecorded parentage. (Mrs. Briggs-Bury.)

Cattleya intermedia Aquinii. (*G.C.* 1900, xxvii, 83, f. 25.) S. Apeloric variety discovered many years ago in the province of Rio Grande do Sul and originally described as a distinct species under the name of *C. Aquinii*.

Cattleya Loddigesii alba. (*O. R.* 1900, 254.) S. A charming pure white variety, with only a faint trace of light yellow down the centre of the lip's disc. (R. H. Measures.)

Cattleya Mariannæ. (*R. H.* 1900, 109.) S. A garden hybrid between *C. dolosa* and *C. Trianæ*. (C. Maron, Brunoy, France.)

Cattleya Martineti. (*J. H. F.* 1900, 416.) S. A garden hybrid between *C. Mossiæ aurea* and *Lælia tenebrosa*. (C. Maron, Brunoy, France.)

Cattleya Mendelii Maudeæ. (*O. R.* 1900, 212.) S. "A fine white, with rose markings on the lip. (W. P. Burkinshaw.)

Cattleya Mendelii rosefieldiensis. (*O. R.* 1900, 250.) S. "A good form in which the petals are tipped with bright mauve." (De B. Crawshay.)

Cattleya Mossiæ rouseleana. (*O. R.* 1900, 173.) S. "A large, rosy form with very richly coloured lip." (Marquis de Wavrin, Somerghem, Belgium.)

Cattleya nigrescens. (*J. H. F.* 1900, 416.) S. A garden hybrid between *Lælia pumila* and *L. grandis tenebrosa*. (C. Maron, Brunoy, France.)

Cattleya Suzannæ. (*J. H. F.* 1900, 670; *G. C.* 1900, xxviii, 267.) S. A garden hybrid between *Cattleya Eldorado* and *C. aurea*. (C. Maron, Brunoy, France.)

Cattleya thayeriana. (*O. R.* 1900, 147.) S. A garden hybrid between *C. intermedia* and *C. Schræderæ alba*. (E. O. Orpet.)

Cattleya Warnero-bowringiana. (*O. R.* 1900, 284.) S. A garden hybrid between the species indicated by the name. (R. I. Measures.)

Cattleya wavriniana. (*G. C.* 1900, xxviii, 181.) S. A garden hybrid between *C. Warscewiczii* and *C. granulosa schofieldiana*. (A. Peeters, Brussels.)

Centaurea eriophora. (*W. G.* 1900, 20, f. 4.) Compositæ. H. An annual about a foot high with woolly sulphur yellow flower-heads about the size of a hazel nut. Portugal. (Dammann & Co, Naples.)

***Cereus mojavensis.** (*B. M.* t. 7705.) Cactaceæ. G. Nearly allied to *C. Fendleri*, from which it differs in its longer radiating spines and its smaller reddish-scarlet flowers. California. (Kew.)

Cereus perlucens. (*M. K.* 1900, 174.) G. A species from the Amazon region, in stature resembling *Pilocereus senilis*, but differing from all other species in the oil-green colour of its stems.

Cereus Wittii. (*M. K.* 1900, 154, f.) G. An extraordinary species with flattened leaf-like branches which spirally twist round stems of trees, &c., attaching themselves by their roots. Flowers unknown. (Berlin B. G.)

***Chamaelirion carolinia.** (*G. C.* 1900, xxvii, May 26. Suppl. 2.) Liliaceæ. H. A re-introduction of an old plant. It forms a tuft of leaves from which the spikes of yellowish white flowers arise to a height of 6–9 inches. Carolina. (T. S. Ware.)

***Chrysanthemum indicum.** (*G. C.* 1900, xxviii, f. 106.) Compositæ. G. One of the two progenitors of the florist's chrysanthemum. Flower-heads half an inch in diameter, of a pure yellow colour. China. (Kew.)

Chrysanthemum viscosum. (*W. G.* 1900, 19, f. 3.) H. An annual with sulphur-yellow ray-florets and orange-yellow disk. Mediterranean region. (Dammann & Co., Naples.)

***Cineraria cantabrigensis.** (*G. M.* 1900, 414.) Compositæ. G. A garden hybrid of unrecorded parentage. (Cambridge.)

***Cineraria Moorei.** (*G. M.* 1900, 414.) G. A garden hybrid between *C. Heritieri* and a form of *C. cruenta*. (Glasnevin.)

Cineraria polyantha. (*G. M.* 1900, 254.) G. A seedling form of *C. cruenta*. (J. Veitch & Sons.)

***Clematis buchaniana.** (*J. H. F.* 1900, 866, f. 34.) Ranunculaceæ. H. A tall climber with panicles of pale greenish-yellow bell-shaped flowers. Himalaya and China. (Paris B. G.)

***Clematis orientalis tangutica.** (*B. M.* t. 7710.) H. A beautiful form with large nodding golden-yellow flowers. (St. Petersburg B. G.)

Coccinia Dinteri. (*R. H.* 1900, 268.) Cucurbitaceæ. G. A woody climber with palmate leaves and handsome scarlet fruits. S. Africa. (Proschowsky, Nice.)

***Codonopsis convolvulacea.** (*Gard.* 1900, lvii, 231.) Campanulaceæ. H. A species with thin wiry stems, and bearing numerous bright blue bells an inch across. Upper Burma. (Kew.)

***Codonopsis lanceolata.** (*Gard.* 1900, lvii, 231.) H. This species is here described as a Passion-flower-like plant, the flowers hanging on the stems like bells 1 in. to 2 in. long and 1 in. wide, their colour greenish-white with purple veins. Upper Burma. (Kew.)

Coffea robusta. (*R. H.* 1900, 583.) Rubiaceæ. S. Congo Free State. [This is *C. Laurentii*.]

***Cola vera.** (*N. B.* 1900, 18.) Sterculiaceæ. S. One of the species which furnishes the Cola nut of commerce. West Tropical Africa. (Berlin B. G.)

Cornus sibirica Sallieri. (*S. H.* 1900, 445.) Cornaceæ. H. A form with large green leaves blotched with creamy-white. (Gouchault, Orleans.)

Cratægus Oxyacantha inermis. (*R. H.* 1900, 72, f. 31.) Rosaceæ. H. A dwarf bushy spineless form of the common Hawthorn. (Héméray-Proust, France.)

***Crinum rhodanthum.** (*G. C.* 1900, xxviii, 142.) Amaryllidaceæ. S. Leaves lorate, about 1 ft. long, 1½ to 2 in. wide; peduncle ½ in. in diam., umbel many-flowered. Perianth-tube 3 in. long; segments lanceolate, red, 2½ in. long, ⅛ in. broad. Bechuanaland. (Kew.)

***Crocus Alexandri.** (*B. M.* t. 7740.) Iridaceæ. H. A form of *C. biflorus*, having the outer segments suffused or striped with purple on the outside the inside being white. Bulgaria. (Kew.)

***Crocus niveus.** (*G. C.* 1900, xviii, 335.) H. An autumn-flowering species with white flowers is here described under this name. (E. A. Bowles.) [*C. marathoniseus.*]

***Cryptocoryne Griffithii.** (*B. M.* t. 7719.) Araceæ. S. A stoloniferous aquatic plant; leaves ovate or orbicular-oblong, dark green above and striolate with minute wavy red lines; spathe purple. Malacca. (Kew.)

***Cryptostemma lusitanicum.** (*G. C.* 1900, xxviii, 390, 391, f. 120.) Compositæ. H. A free-blooming annual, with pale yellow flower-heads and a dark brown disc. (W. E. Gumbleton.) [This is the well known *C. calendulaceum.*]

***Cryptostylis arachnites.** (*G. C.* 1900, xxvii. 244.) Orchidaceæ. S. A terrestrial herb related to *Pogonia*, with a fleshy rootstock. erect, lanceolate green leaves. and scapes a foot high bearing numerous spider-like flowers; the green segments are linear and spreading, and the lip fleshy, purple and mottled. Khasia, &c. (Kew.)

***Cymbidium Huttoni.** (*O. R.* 1900, 232, *B. M.* t. 5676.) Orchidaceæ. S. "Has an oblong, somewhat compressed pseudobulb, bearing two very broad leaves at the apex, and a pendulous raceme of about ten large fleshy flowers, which turn up in a sub-erect position from the point of their attachment to the rachis. They are about an inch and three-quarters long, rather broad, and densely dotted all over with dark, dusky brown, on a light yellow ground, the spots becoming more purple and almost suffused towards the apex of the petals and lip. In its broad leaves and general appearance it is most allied to *C. devonianum.*" In cultivation as long ago as 1867, but lost sight of until recently re-introduced from Java. (Kew.)

Cymbidium I'Ansoni. (*O. R.* 1900, 191, f. 34.) G. Supposed to be a natural hybrid between *C. lowianum* and *C. tracyanum.* (H. Low & Co.)

Cymbidium Maroni. (*J. H. F.* 1900, 766; *R. H.* 1900, 703.) G. A garden hybrid between *C. Hookeræ* and *C. Mastersi.* (C Maron, Brunoy, France.)

***Cynorchis purpurascens.** (*G. C.* 1900, xxviii, 335; *Gard.* 1900, lviii, 375, f.) Orchidaceæ. G. The true plant of this name now introduced for the first time. A monophyllous species, leaf 12 to 16 in. long, 2 to 3½ in. wide, pale green with purplish margin. Flower-scape 6 to 8 in. long, bearing 6 to 12 flowers in a dense raceme; flowers over an inch long and wide, the lip spreading, flat, lobed, produced at the base to a spur over an inch long; the colour of the whole flower is bright rosy mauve, the lip darker with a pure white patch in the middle. Madagascar. (Kew.)

Cypripedium borchgraveanum. (*L.* 1900, t. 715; *S. H.* 1901, f. 135.) Orchidaceæ. S. A garden hybrid between *C. villosum* and *C. leeanum superbum.* (L'Horticole Coloniale, Brussels.)

Cypripedium cardozoianum. (*Jard.* 1900, 24.) S. A garden hybrid between *C. barbatum Warneri* and *C. albertianum.* (Peeters, Brussels.)

Cypripedium Charlesworthi album. (*G. C.* 1900, xxviii, 282.) S. An "albino" form of the type. (Charlesworth & Co.)

Cypripedium chrysotoxum. (*R. H.* 1900, 109.) S. A garden hybrid between *C. lathamianum* and *C. villosum.* (Duval & Sons, Versailles.)

Cypripedium ciliolare × Sallieri. (*R. H.* 1900, 165.) S. A garden hybrid between the species indicated by the name. (Duval & Sons, Versailles.)

Cypripedium Cobbiæ. (*G. C.* 1900, xxviii, 384.) S. A garden hybrid between *C. Chas. Canham* and *C. J. Howes.* (Walter Cobb.)

Cypripedium Curtisii × præstans. (*O. R.* 1900, 250.) S. A garden hybrid between the species indicated in the name. (J. Gurney Fowler.)

Cypripedium haynaldiano-Hookeræ. (*O. R.* 1900, 252.) S. A garden hybrid between the species indicated in the name. (F. Sander & Co.)

Cypripedium insigne fowlerianum. (*O. R.* 1900, 29.) S. A finely shaped and coloured form. (J. Gurney Fowler.)

Cypripedium lacteum. (*J. H. F.* 1900, 113.) S. A garden hybrid between *C. Sallieri* and *C. leeanum.* (Duval & Sons, Versailles.)

Cypripedium lawrenceanum splendens. (*G. C.* 1900, xxvii, 30.) S. A variety with the dorsal sepal longer and narrower than usual, and tinted and lined with rich rose-purple (L'Horticole Coloniale, Brussels.)

Cypripedium leeano-Charlesworthii. (*R. H.* 1900, 165.) S. A garden hybrid between the two species indicated by the name.

Cypripedium Loyensi. (*J. H. F.* 1900, 53.) S. A garden hybrid between *C. leeanum superbum* and *C. nitens superbum.* (Peeters, Brussels.)

Cypripedium Mahleræ. (*Jard.* 1900, 80.) S. A garden hybrid between *C. lawrenceanum* and *C. rothschildianum.* (Peeters, Brussels.)

Cypripedium Maudiæ. (*O. R.* 1900, 308; *G. M.* 1900, 771, f.) S. A garden hybrid between *C. lawrenceanum hyeanum* and *C. callosum Sanderæ.* (Charlesworth & Co.)

Cypripedium Morteni. (*O. R.* 1900, 28.) S. A garden hybrid between *C. leeanum masereelianum* and *C. chamberlainianum.* (W. M. Appleton.)

Cypripedium Rogeri. (*R. H.* 1900, 227.) S. A garden hybrid between *C. Chantini* and *C. chamberlainianum.* (Lebaudy, Paris.)

Cypripedium rothschildo-lawrenceanum. (*G. C.* 1900, xxviii, 58.) S. A garden hybrid between the species indicated in the name. (Sir Trevor Lawrence.)

Cypripedium Sallieri × spicerianum. (*R. H.* 1900, 165.) S. A garden hybrid between the species indicated by the name. (Duval & Sons, Versailles.)

Cypripedium sanderiano-Curtisii. (*G. C.* 1900, xxvii, 75, f. 23.) S. A garden hybrid between the two species indicated in the name. (N. C. Cookson.)

Cypripedium schusterianum. (*O. R.* 1900, 90.) S. A garden hybrid between *C. villosum*, and *C. Hookeræ volonteanum.* (L'Horticole Coloniale, Brussels.)

Cypripedium tixallense. (*G. C.* 1900, xxvii. 207.) S. A garden hybrid between *C. lawrenceanum* and *C. rothschildianum.* (E. Bostock.)

Cypripedium Unxia. (*O. R.* 1900, 314.) S. A garden hybrid between *C. harrisianum* and *C. lawrebel.* (R. I. Measures.)

***Cyrtosperma congolensis.** (*S. H.* 1900, 473, f. 158.) Araceæ. S. "Leaves of an *Amorphophallus*, petioles somewhat spinose." Congo Free State. (L'Horticole Coloniale, Brussels.) [This is apparently *Anchomanes dubius*, Schott.]

***Decaisnea Fargesii.** (*R. H.* 1900, 270.) Berberidaceæ. H. H. A deciduous shrub with long pinnate leaves—sometimes attaining a yard in length—and large greenish-yellow flowers arranged in lax panicles. Western China. (M. L. de Vilmorin.)

Dendrobium dalhou-nobile. (*G. C.* 1900, xxvii, 371, f. 125.) Orchidaceæ. S. A garden hybrid between the species indicated by the name. (R. Brooman-White.)

Dendrobium Elwesii. (*O. R* 1900, 147.) S. A garden hybrid between *D. aureum* and *D. Hildebrandii.* (H. J. Elwes.)

Dendrobium Hodgkinsoni. (*O. R.* 1900, 27, *B. M.* t. 7724.) S. Allied to *D. atroviolaceum*, except that the petals are narrow, connivent, and unspotted. New Guinea. (F. Sander & Co.)

***Dendrobium inæquale.** (*B. M.* t. 7745.) S. Sepals and petals spreading and recurved, oblong-lanceolate, acuminate, white. Lip shorter than the sepals, lateral lobes convolute, forming a cylindric tube, pale yellow, streaked with purple within. New Guinea. (F. Sander & Co.)

Dendrobium leeanum atropurpureum. (*Gard.* 1900, lviii. 327.) S. A supposed natural hybrid between *D. Phalænopsis* and *D. superbiens.* (Sir F. Wigan.)

Dendrobium macrophyllum Richardi. (*G. M.* 1900, 99.) S. A variety with medium sized and very fleshy flowers set on long bristled pedicels. Flowers of a light greenish buff, the lip veined with dark brown. (C. J. Lucas.)

Dendrobium picturatum. (*G. M.* 1900, 178.) S. A garden hybrid between *D. Ainsworthi* and *D. heterocarpum.* (T. B. Haywood.)

Dendrobium Staffordii. (*O. R.* 1900, 147.) S. A garden hybrid between *D. Cassiope* and *D. Bensonæ*. (T. Stafford.)

Dianthus stellaris. (*W. G.* 1900, 90, f. 13.) Caryophyllaceæ. H. A new race of the well-known garden *D. Heddewigi*, characterized by its narrow lanceolate petals.

***Dichorisandra thysiana.** *R. H.* 1900, 583; *S. H.* 1900, 485, f. 161; *G. C.* 1900, xxviii, 302, f. 90.) S. "Large glossy handsome leaves with channelled hairy petioles: stems flexuose." Congo Free State (L'Horticole Coloniale, Brussels.) [There are no species of *Dichorisandra* found wild in the Old World: this plant is probably *Pulisota thyrsiflora*. (P. Maclaudii.)]

Diospyros Ebenaster. (*S. C. A. A. Cat.* 1900, 24.) Ebenaceæ. G. The "Zapote negro," a tall shady tree: fruits size of an orange, green outside, almost black inside, very sweet. Mexico.

***Diostea juncea.** (*B. M.* t. 7695.) Verbenaceæ. H. A bush or small tree with green fistular branches and distant pairs of opposite, crenate, rather fleshy small leaves: flowers pale lilac, crowded in peduncled axillary and terminal spikes. Chili. (Kew.)

Dracæna albanensis. (*G. C.* 1900, xxvii, 206.) Liliaceæ. S. A form with broad green leaves with a yellow stripe down the middle. (F. Sander & Co.)

***Dracæna Lacourti.** (*R. H.* 1900, 583.) S. "Small, crowded, spreading leaves." Congo Free State. (L'Horticole Coloniale, Brussels.)

Dracæna Offeri. (*Gard.* 1900, lviii, 294.) S. A garden hybrid between *D. Warreni* and *D. Gladstoni*. (J. Warren.)

Echinocactus Hartmannii. (*M. K.* 1900, 170, f.) Cactaceæ. G. A species—of which the flowers are unknown—belonging to the *Discocactus* section. Paraguay. (Hartmann, Hamburg.)

Epidendrum orphanum. (*G. C.* 1900, xxvii, 143.) Orchidaceæ. S. A garden hybrid of which the parentage is not recorded. (F. Sander & Co.)

Epidendrum purpurachylum. (*O.R.* 1900, 189.) S. "The sepals and petals are dull olive green, tinged with brown, and the corrugated front lobe of the lip is deep purple with a broad, whitish-yellow margin. The flowers are very fragrant, not unlike violets." (Glasnevin.)

Epilælia heatonensis. (*O. R.* 1900, 118.) G. A garden hybrid between *Lælia cinnabarina* and *Epidendrum Wallisii*. (Charlesworth & Co.)

***Eranthis cilicica.** (*Gard.* 1900, lvii, 183, 203.) Ranunculaceæ. H. Closely allied to *E. hyemalis*, but with a more finely divided involucre and bright yellow flowers. Cilicia. (Kew.)

Eremurus Warei. (*G. C.* 1900, xxvii, 409.) Liliaceæ. H. Probably a natural hybrid between *E. Bungei* and *E. Olgæ*. It grows to a height of 8 ft., the flowers being yellow in colour, but less bright than in *E. Bungei*. Central Asia. (T. S. Ware.)

Eria micholitziana. (*N.B.* 1900, 21.) Orchidaceæ. S. A species nearly related to *E. crassicaulis* and *E. bambusifolia*. New Guinea. (Berlin B. G.)

***Erigeron leiomerus.** (*B. M.* t. 7743.) Compositæ. H. A tufted low-growing perennial with small linear leaves, the solitary flower-heads having violet rays and a yellow disk. Colorado. (Kew.)

Eugenia Pitanga. (*S. C. A. A. Cat.* 1900, 25.) Myrtaceæ. G. "Leaves medium-sized, shiny; fruits scarlet, shaped like a small tomato, very pleasant to eat and making excellent jelly." Brazil.

***Eulophia lubbersiana.** (*R. H. B.* 1900, 3, t.) Orchidaceæ. S. A species nearly allied to *E. maculata*; leaves dark green marbled with white after the fashion of those of *Dracæna goldieana*. Congo Free State. (Institut Agricole de l'État, Gembloux, Belgium.) [Probably *E. Ledienii*.]

Eulophiella Hamelinii. (*O. R.* 1900, 197.) S. Orchidaceæ. Raceme branching; sepals and petals acuminate, white; lip three-lobed, the obcordate front lobe well spotted with red and bearing three yellow keels at the base. The plant resembles *E. peetersiana* in habit, but the leaves are narrower and the flowers smaller. Madagascar. (L. Hamelin, Dordogne, France.)

***Ficus eetveldiana.** (*R. H.* 1900, 583; *S. H.* 1900, 6, f. 3; *G. C.* 1900, xxviii, 303, f. 91.) S. Urticaceæ. "A species with large broadly-oval leaves." Congo Free State. (L'Horticole Coloniale, Brussels.)

***Ficus Luciani.** (*R. H.* 1900, 583; *S. H.* 1900, 460.) S. A species which is not only an ornamental one but is said to furnish rubber of an excellent quality. Congo Free State. (L'Horticole Coloniale, Brussels.)

***Glaucium luteum tricolor.** (*G. C.* 1900, xxviii, 148.) Papaveraceæ. H. A form with large brilliant coppery orange flowers, having a black centre. Asia Minor. (A. K. Bulley.)

Gossypium Davidsoni. (*S. C. A. A. Cat.* 1900, 50.) Malvaceæ. G. "A woody species with beautiful yellow flowers." Lower California.

Grindelia patens. (*G. C.* 1900, xxvii, 59, f. 18.) Compositæ. H. A pale yellow-flowered plant with amplexicaul leaves. The stems are covered with glandular hairs. California. (W. E. Gumbleton.)

***Gymnopsis uniserialis.** (*W. G.* 1900, 20, f. 5.) Compositæ. H. An annual much resembling *Helianthus cucumerifolius* in general aspect. Texas. (Dammann & Co., Naples.)

***Habenaria Lugardi.** (*G. C.* 1900, xxviii, 322.) Orchidaceæ. S. The leaves, two in number, are broadly suborbicular, spreading flat on the soil, 4 in. long by 6 in. broad, bright green, very fleshy and brittle. The spike, 2 ft. high, bears a dozen white flowers nearly an inch across, with a tripartite lip, with filiform lateral lobes, and a straight drooping spur 6 in. long. Ngamiland. (Kew.)

***Helychium Moorei.** (*G. C.* 1900, xxviii, 142.) Scitamineæ. S. A garden hybrid between *H. coccineum* and *H. jardnerianum*. (Glasnevin.)

Heuchera zabeliana. (*Gard.* 1900, lvii, 485.) Saxifragaceæ. H. A green-leaved plant, with tall scapes of deep rose-coloured flowers. (T. Smith.)

***Hippeastrum (Habranthus) roseum** (*G. C.* 1900, xxviii, 287.) Amaryllidaceæ. G. Has a dark brown ovoid bulb, an inch long, from which spring two or three linear, dark green leaves, 9 in. long, followed by the flower-scape, which is only 6 in. high and bears two flowers. These are horizontal, over 2 in. long, the funnel-shaped limb formed of six lanceolate segments of a rich crimson colour, yellowish at the base. Montevideo. (Kew.)

***Hippeastrum teretifolium.** (*G. C.* 1900, xxviii, 142.) G. A new species of the section Habranthus differing from all other known Hippeastrums in having subterete leaves. Flowers few in an umbel, campanulate rather than tubular, rosy pink, 2 in. long. Montevideo. (Kew.)

***Impatiens grandiflora.** (*G. C.* 1900, xxviii, 424.) Geraniaceæ. S. "Plant 2 to 3 ft. high, glabrous, with lanceolate leaves, 4 in. long by ¾ in. broad, tapering to both ends, glandular, serrulate; stalk 1 in. long. Flowers on axillary peduncles, half the length of the leaf; flowers about 1½ in. across, rosy-lilac, with a long spur; sepals with a network of rosy-purple veins on the inner surface; petals twice the length of the sepals." Madagascar. (Kew.)

Ipomœa aurea. (*S. C. A. A. Cat.* 1900, 86.) Convolvulaceæ. G. A tuberous-rooted species with slender stems and bright lemon-yellow flowers over 2 in. across. Lower California.

***Ipomœa leptophylla.** (*Gard.* 1900, lvii, 235.) H. A bush-like branching plant with a tuberous root. The flowers are about 3 in. in diameter, rose colour, deepening to purple at the throat. North-Western America. (Kew.)

***Iris aurea intermedia.** (*G. C.* 1900, xxviii, 22.) Iridaceæ. H. An intermediate form between *I. aurea* and *I. orientalis*, with the deep yellow colour of the former and the narrow standards of the latter. (Kew.)

***Iris obtusifolia.** (*B. M.* t. 7701.) H. A species with short, oblong, obtuse leaves and yellowish flowers. The falls are striped and bearded at the base. Persia. (Kew.)

Iris ochro-aurea. (*G. C.* 1900, xxviii, 32.) H. Evidently a hybrid, the rich yellow beardless falls edged with a cream-coloured band. Standards erect, bilobed at the apex. (T. Smith.)

***Iris stenophylla.** (*G. C.* 1900, xxviii, 170, 171, f. 55; *B. M.* t. 7734.) H. A bulbous species allied to *I. persica*. The colour of the flower is lilac, while the blade is tipped and spotted with very dark blue. Cilician Taurus. (Kew.)

Iris urmiensis. (*G. C.* 1900, xxviii, 373, f. 116.) H. A species, belonging to the Oncocyclus group, about 7 in. high with yellow flowers. N.W. Persia. (Van Tubergen Jr., Haarlem.)

***Jacobinia suberecta.** (*R. H.* 1900, 210, t.) Acanthaceæ. S. A dwarf perennial covered with a white silky pubescence; leaves oval, obtuse; flowers tubular, light orange-yellow. Uruguay. (André, Paris.)

***Kalanchoë Bentii.** (*G. C.* 1900, xxvii, 404; *B. M.* t. 7765.) Crassulaceæ. G. A new species with "an unbranched stem, 3 ft. high, and nearly an inch in diameter, bearing near the top six pairs of decussately arranged leaves, from 3 to 6 in. long, sub-cylindrical, rigid, narrowed gradually to an acute point. Flowers white, in an erect loose panicle, 8 in. long by 5 in. wide, calyx of four fleshy spreading lobes; corolla 1½ in long, inflated at the base and distinctly four-angled, the apex divided into four lobes, forming a limb nearly an inch across." The largest flowered of all known Kalanchoës. Hadramaut. (Kew.)

Kniphofia Leichtlini aurea. (*G. M.* 1900, 652.) Liliaceæ. H. A form with broad spikes about a foot long, the upper unopened flowers being soft orange red, and the lower ones a soft yellow colour. (Barr & Sons.)

***Kniphofia rufa.** (*B. M.* t. 7706.) H. A dwarf species, growing about 1½ ft. high with a lax raceme of flowers, the lower of which are yellow, while the upper are tinged with red. Natal. (Max Leichtlin, Baden.)

Lælia Edissa. (*G. M.* 1900, 127, 193 f.) Orchidaceæ. S. A garden hybrid between *L. anceps* and *L. purpurata*. (J. Veitch & Sons.)

Lælia jongheana Templæ. (*O. R.* 1900, 124; *G. M.* 1900, 220 f.) S. A fine light rose form with the front of the lip white, tinged with rose. (Mrs. Temple.)

Lælia præstans gloriosa. (*G. C.* xxviii, 346.) S. A very richly-coloured form. Sepals and petals bright purplish-rose; front of lip claret colour. (J. Colman.)

Lælia pumila delicatissima. (*O. R.* 1900, 349.) S. A variety in which the flowers are blush white with a light purple area on either side of the lip, connected by a similar curved line in front of the crest. (Sir Trevor Lawrence.)

Lælia purpurata littleana. (*O. R.* 1900, 174; *J. of H.* 1900, xl, 453, f. 122.) S. A variety with white sepals and petals, the lip with a purple area on each side of the white centre, and the throat yellow with dark lines. (H. Little.)

Lælia purpurata tracyana. (*G. C* 1900, xxvii, No. 696, suppl. 4.) S. A variety with white flowers having a light flush of rose on the lip. (H. Little.)

Lælio-cattleya Binoti. (*G. C.* 1900, xxviii, 370.) Orchidaceæ. S. A natural hybrid between *Cattleya bicolor* and probably *Lælia pumila*. (Peeters, Brussels.)

Lælio - cattleya Charlesworthii. (*O. R.* 1900, 61.) S. A garden hybrid between *Lælia cinnabarina* and *Cattleya dowiana aurea*. (Charlesworth & Co.)

Lælio-cattleya colmaniana. (*G. C.* 1900, xxviii, 240.) S. A garden hybrid between *L.-c. arnoldiana* and *Cattleya dowiana aurea*. (F. Sander & Co.)

Lælio-cattleya Cranstounæ. (*O. R.* 1900, 19.) S. A garden hybrid between *Lælia tenebrosa* and *Cattleya harrisoniana violacea*. (Dr. Cranstoun.)

Lælio - cattleya elegantissina. (*R. H.* 1900, 520.) S. A garden hybrid between *Cattleya intermedia* and *Lælia cinnabarina*. (Cappe & Son, Vésinet, France.)

Lælio - cattleya Ernesti palida. (*O. R.* 1900, 90.) S. "A pretty light form with cowslip-yellow sepals and petals." (C. Maron, Brunoy, France.)

Lælio-cattleya Hurstii. (*O. R.* 1900, 287.) S. A garden hybrid between *Cattleya Skinneri* and *Lælia purpurata*. (C. C. Hurst.)

Lælio-cattleya hyeana. (*O. R.* 1900, 174.) S. A garden hybrid between *Lælia purpurata* and *Cattleya lawrenceana*. (J. Veitch & Sons, Ltd.)

Lælio-cattleya intermedio-cinnabarina. (*G. C.* 1900, xxviii, 270.) S. A garden hybrid between *Lælia cinnabarina* and *Cattleya intermedia*. (Major Joicey.)

Lælio-cattleya inversa. (*R. H.* 1900, 584.) S. A garden hybrid between *Lælia purpurata* and *Cattleya Warneri*. (C. Maron, Brunoy, France.)

Lælio-cattleya lucasiana. (*J.H.F.* 1900, 54; *G.C.* 1900, xxviii, 466.) S. A garden hybrid between *Cattleya labiata flammea* and *Lælia tenebrosa*. (C. Maron, Brunoy, France.)

Lælio-cattleya massangeana. (*O.R.* 1900, 182.) S. A garden hybrid between *Lælia tenebrosa* and *Cattleya schilleriana*. (Peeters, Brussels.)

Lælio-cattleya Nephelia. (*O. R.* 1900, 250.) S. A garden hybrid between *Cattleya Mossiæ* and *L.-c. amesiana*. (J. Veitch & Sons, Ltd.)

Lælio-cattleya nivalis. (*G. C.* 1900, xxviii, 267.) S. A garden hybrid between *Lælia glauca* and *Cattleya intermedia*. (C. Maron, Brunoy, France.)

Lælio-cattleya ochracea. (*J. H. F.* 1900, 841.) S. A garden hybrid between *Lælia harpophylla* and *Cattleya Sallieri*. (C. Maron, Brunoy, France.)

Lælio-cattleya Senarti. (*R. H.* 1900, 521.) S. A garden hybrid between *Lælia elegans* and *Cattleya callistoglossa*. (C. Maron, Brunoy, France.)

Lælio-cattleya Wiganiæ. (*O. R.* 1900, 214.) S. A garden hybrid between *L.-c. gottoiana* and *Cattleya Mossiæ*. (Sir F. Wigan.)

Lælio-cattleya Wilsonæ. (*O. R.* 1900, 28.) S. A garden hybrid between *Cattleya labiata* and *Lælia dayana*. (F. Sander & Co.)

Ligustrum delavayanum. (*Journ. de Bot.* 1900, 172.) Oleaceæ. H. H. A dwarf-growing Privet with myrtle-like leaves, in habit much resembling some of the smaller Cotoneasters. Yunnan. (M. L. de Vilmorin, France.)

***Lilium kewense.** (*Gard.* 1900, lviii, 99, f.) Liliaceæ. H. A garden hybrid between *L. Henryi* and *L. Browni chloraster*. (Kew.)

***Lindenbergia grandiflora.** (*B. M.* t. 7738.) Scrophulariaceæ. H. A Mimulus-like plant with yellow flowers. Himalaya. (Cambridge.)

Linum Chamissonis. (*G. C.* 1900, xxviii, 223.) Linaceæ. H. A dwarf species with yellow flowers and scarlet buds. Straits of Magellan. (A. K. Bulley.)

***Linum pubescens.** (*Gard.* 1900, lviii, 427.) H.H. A tender perennial with broad glandular leaves, and large pink flowers, which are shaded at the base of the petal with dark purple lines. Palestine. (Kew.)

Lonicera involucrata humilis. (*Späth Cat.* 1900. 95.) Caprifoliaceæ. H. A form differing from the type in its dwarfer habit and smaller flowers. Colorado. (Späth, Berlin.)

Lycaste Ballæ. (*G. M.* 1900, 331, f.) Orchidaceæ. G. A garden hybrid between *L. Skinneri* and *L. plana measuresiana*. (Charlesworth & Co.)

Lycaste Cappei. (*R. H.* 1900, 109.) G. A garden hybrid between *L. Skinneri* and *L. plana*. (Cappe & Son, Vesinet, France.)

Lycaste micheliana. (*R. H.* 1900, 264.) G. A plant in general aspect much resembling *L. aromatica*, but with the floral segments relatively broader, &c. Mexico. (Micheli, Geneva.)

***Lysionotus carnosa.** (*G. C.* 1900, xxviii, 349.) Gesneraceæ. G. A dwarf shrub, glabrous in all its parts, with green, straight, rigid branches, and internodes rather shorter than the leaves. The leaves are in threes, shortly stalked, thick and fleshy, ovate in shape, and 1½ to 2 in. long, with a few coarse teeth on the margin. The flowers are about 1¼ in. long, in shape like those of a small *Didymocarpus*; white, tinged with lilac, and borne in pairs in the axils of the upper leaves. China. (A. K. Bulley and Kew.)

Machaerium Tipa. (*S. C. A. A. Cat.*, 1900. 44.) Leguminosæ. S. "A magnificent shade tree, with light elegant foliage and handsome flowers, yielding one of the rosewoods of Southern Brazil."

***Maranta liebrechtsiana.** (*R. H.* 1900, 583; *S. H.* 1900, 471.) S. Scitamineæ. "Large, decorative, oval, green leaves. The natives of the Congo Free State use the leaves of this species to coagulate the latex of Landolphias." Congo Free State. (L'Horticole Coloniale, Brussels.)

***Maranta lujaiana.** (*R. H.* 1900, 583; *S. H.* 1900, 472.) S. "Handsome long-stalked leaves, purple beneath." Resembles *M. liebrechtsiana* in general aspect and is employed by the Congolese tribes for the same purpose as that species. (L'Horticole Coloniale, Brussels.)

Masdevallia burfordiensis. (*G. C.* 1900, xxviii, 346.) G. Orchidaceæ. A singular and distinct species provisionally named. Leaves fleshy. Flowers of the same class as *M. mooreana*, but larger, and of thinner texture; ground colour white but the greater part of the surface dotted and tinged with claret colour. Petals white with purple lobes, lip rather large, purple. (Sir Trevor Lawrence.)

***Masdevallia deorsa.** (*O. R.* 1900, 255; *G. C.* 1900, xxviii, 395, f. 121.) G. Has the anomalous habit of growing head downward like *Cattleya citrina*. A member of the *Coriacea* group but differs from most others in having a descending scape, and in the lateral sepals being free. The perianth tube is short and broad, the dorsal sepal ¾ inch long, and the lateral sepals about twice as long, each terminating in a long, rather slender tail. The colour is light buff yellow, much blotched with purple-brown. The petals are light greenish-yellow; the lip papillose in front, deep purple, somewhat mottled with yellow behind. The leaves are 10–13 inches long, coriaceous and rather narrow; they invariably maintain their downward direction. Columbia. (Glasnevin.)

Masdevallia xanthina albida. (*O. R.* 1900, 48.) A variety with white flowers. (Glasnevin.)

***Matthiola coronopifolia.** (*B. M.* t. 7750.) Cruciferæ. H. A perennial with pinnately lobed leaves, covered with hoary down; flowers violet, with undulate petals. Sicily. (Kew.)

***Matthiola sinuata oyensis.** (*B. M.* t. 7703.) H. Annual or biennial with large fragrant white flowers, and glabrous foliage. Western France. (Kew.)

Maxillaria scurrilis. (*O. R.* 1900, 234; *G. C.* 1900, xxviii, 64, f. 13.) G. Allied to *M. longissima* but markedly different in having the sepals and petals blotched with dark, blackish-brown. (Sir Trevor Lawrence.)

***Meconopsis grandis.** (*G. C.* 1900, xxvii, 352.) Papaveraceæ. H. A dwarf species with nodding purple flowers, borne singly on stems about 1 ft. high. Himalaya. (A. K. Bulley.)

Mertensia virginica rubra. (*G. C.* 1900, xxvii, Apr. 28, Suppl. 4.) Boraginaceae. H. A variety with pink-coloured flowers. (A. Perry.)

Miltonia vexillaria Memoria Lindeni. (*O. R.* 1900, 171.) Orchidaceæ. S. "A large and richly-coloured form." (L'Horticole Coloniale Brussels.)

Mormodes buccinator Rolfei. (*G. M.* 1900, 16.) Orchidaceæ. S. A variety with bronzy-green sepals and petals and a rosy-crimson labellum. (Sir Trevor Lawrence.)

Mormodes oberlanderianum. (*G. C.* 1900, xxviii 317, f. 96.) S. Apparently closely allied to *M. buccinator*. Sepals and petals are lemon-yellow, spotted with rose, the lip apricot-coloured, spotted with rose on the sides and base. (Dr. Oberländer, Dresden.)

***Muscari præcox.** (*Gard.* 1900, lvii, 142.) Liliaceæ. H. Evidently a small form of the well-known *Hyacinthus azureus*. Cilicia. (Kew.)

***Musa religiosa.** (*R. H.* 1900, 262.) Scitamineæ. S. A species with a bulbous base and dry fruits, apparently nearly allied to *M. Ensete*. Tropical Africa. (Jardin Colonial, Paris.)

Odontoglossum crispum aureum rosefieldense. (*O. R.* 1900, 170; *J. of H.* 1900, xl, 411, f. 111.) Orchidaceæ. G. A broad-petalled form with flowers of a bright canary-yellow tint. (De B. Crawshay.)

Odontoglossum crispum Baxteri. (*O. R.* 1900, 25.) G. "A distinct and heavily spotted form with round flowers of good substance, but on the small side." (T. Baxter.)

Odontoglossum crispum Confetti. (*O. R.* 1900, 175.) G. "A white form evenly blotched with purple." (L'Horticole Coloniale, Brussels.)

Odontoglossum crispum cooksonianum. (*G. M.* 1900, 100, f.) G. A beautiful variety with large, finely spotted flowers. (N. Cookson.)

Odontoglossum crispum De Sadeleri. (*O. R.* 1900, 284.) G. Flowers nearly circular in shape; segments whitish in the centre, tinged with faint yellow at the margin and spotted with brown. (F. Claes, Brussels.)

Odontoglossum crispum morecambense. (*O. R.* 1900, 26.) G. A variety with large white flowers of excellent shape. (T. Baxter.)

Odontoglossum crispum oakwoodiense. (*G. C.* 1900, xxvii, 358.) G. A variety with large flowers of a primrose-yellow colour. heavily blotched with rose-purple. (N. C. Cookson.)

Odontoglossum crispum pittianum. (*G. C.* 1900, xxvii, 194; *G. M.* 1900, 296, f.) G. A variety with large and very finely coloured flowers. (H. T. Pitt.)

Odontoglossum crispum radiosum. (*O. R.* 1900, 175.) G. A cream-white variety with red-brown spots arranged in radiating fashion. (L'Horticole Coloniale, Brussels.)

Odontoglossum crispum sulphureum. (*O. R.* 1900, 19.) G. A pretty sulphur white of good shape, with a few dark brown spots on the lip, and minute dots on the basal margin. (T. Baxter.)

Odontoglossum crispum tessellatum. (*O. R.* 1900, 171.) G. "A fine form, blotched and marbled with reddish purple. and tinged with purple on the back of the segments." (L'Horticole Coloniale, Brussels.)

Odontoglossum crispum Victoria Regina. (*G. C.* 1900, xxvii, No. 696, suppl. 4; *J. of H.* 1900, xl, 367, f. 102.) G. Flowers tinted with rose-purple especially on the reverse side, the sepals and petals bearing conspicuous purplish blotches in the centre; lip white with yellow disc, having a brown blotch in front. (W. Thompson.)

Odontoglossum Emmæ. (*S. H.* 1901, 355, f. 122.) S. A garden name for a form of *O. crispum*.

Odontoglossum luteopurpureum Mossii. (*O. R.* 1900, 154; *J. of H.* 1900, xl, 345, f. 96.) G. A variety with heavily blotched sepals and petals, and the ground colour of the lip nearly white. (De B. Crawshay.)

Odontoglossum luteopurpureum radiatum. (*O. R.* 1900, 223.) G. A variety in which the front lobe of the lip is broad and much dilated. (J. Hye-Leysen, Ghent.)

Odontoglossum wendlandianum crawshayanum. (*O. R.* 1900, 144; *G. M.* 1900, 521, f.) G. A handsome form with flowers nearly 3 in. across, the sepals and petals flushed with rose and densely spotted with chocolate. (De B. Crawshay.)

Oncidium flexuosum unicolor. (*O. R.* 1900, 213.) G. A variety with clear yellow unspotted flowers. (Stanley Ashton & Co.)

Opuntia fragilis cæspitosa. (*Späth Cat.* No. 106, 145.) Cactaceæ. H. This form has bright green joints, smaller and more crowded than those of the type; flowers bright yellow with red-brown centre and carmine-red filaments. Colorado.

Opuntia fragilis tuberiformis. (*Späth Cat.* No. 106, 145.) H. This form has olive-green, peculiar thick bulbous-looking joints; flowers bright yellow with a greenish sheen and bright carmine-red filaments. Colorado.

Opuntia pachyarthra flava. (*Späth Cat.* No. 106, 146.) H. The prostrate, thick, almost oval or cylindrical limbs call to mind *O. fragilis*, whilst the large bright yellow flowers with yellow filaments approach *O. camanchica*. Indeed this plant is regarded as a hybrid between the two species above-named. Colorado.

Opuntia pachyclada spaethiana. (*Späth Cat.* No. 106, 146.) In the shape of the joints and in habit this resembles *O. pachyclada*, but the flowers which are yellow when first open change later to a wonderful brownish-salmon colour. Colorado.

Opuntia rhodantha pisciformis. (*Späth Cat.* No. 106, 146.) H. The joints of this ornamental species have a fish-like outline, of a grey-green colour strongly beset with spines; the flowers are a soft bright carmine with vivid red filaments. Colorado.

Opuntia rhodantha schumanniana. (*Späth Cat.* No. 106, 146.) H. One of the handsomest of the Colorado species. Joints dark grey-green, longish, erect, of medium size; flowers shell-shaped, rich dark carmine in colour.

Opuntia xanthosoma gracilis. (*Späth Cat.* No. 106, 147.) H. Joints medium sized, broadly obovate or rounded, grey-green in colour and beset with strong spines; flowers small, carmine red: a dwarf grower. Colorado.

***Orchis folioso-maculata.** (*O. R.* 1900, 251.) Orchidaceæ. H. A supposed natural hybrid between the species indicated in the name. (Paul & Son.)

Oxytropis splendens. (*Gard.* 1900, lvii, 235.) Leguminosæ. H. A new species with silky silvery white foliage, and many flowered spikes of deep rose-coloured flowers. North America.

Paphiopedilum magnificum. (*O. R.* 1900, 30.) Orchidaceæ. S. A garden hybrid between *P. pollettianum* and *P. insigne.* (A. J. Keeling.)

Paphiopedilum miniatum. (*O. R.* 1900, 351.) S. A garden hybrid between *P. Curtisii* and *P. insigne Chantini.* (R. Young.)

Paphiopedilum pavoninum. (*O. R.* 1900, 181.) S. A garden hybrid between *P. venustum* and *P. Boxallii.* (G. Shorland Ball.)

Passiflora europhylla. (*G. C.* 1900, xxviii, 350.) Passifloraceæ. S. Distinguished by its very broad oblong leaves, rounded at the base with two large glands, and two divergent triangular lobes at the apex, with a small intermediate lobule in the centre. The upper surface is dull green, the lower surface purplish. The flowers are whitish and not specially attractive. British Guiana. (F. Sander & Co.)

***Pedicularis curvipes.** (*B. M.* t. 7735.) Scrophulariaceæ. H. A dwarf-growing, half parasitical species, with finely divided leaves and spikes of rose-coloured flowers. Himalaya. (A. K. Bulley.)

Phaius oakwoodiensis. (*O. R.* 1900, 227; *G. C.* 1900, xxviii, 92, f. 23.) Orchidaceæ S. A garden hybrid between *P. Cooksoni* and *P. Humblotii.* (N. C. Cookson.)

Phajus Opoixi. (*J. H. F.* 1900, 256.) S. A garden hybrid between *P. Wallichii* and *P. Humbloti.* (Luxemburg Garden, Paris.)

Phaius Wallichii flavescens. (*O. R.* 1900, 159.) S. A variety in which the sepals and petals are light yellow in colour, and the front of the lip still paler. (J. S. Womack.)

Phalænopsis schilleriano-stuartiana. (*G. M.* 1900, 63, f.) Orchidaceæ. S. A garden hybrid between the species indicated by the name. (H. Low & Co.)

***Phlomis lunarifolia.** (*B. M.* t. 7699.) Labiatæ. H. A handsome shrubby Labiate with large heads of golden-yellow flowers. In habit and general aspect it resembles the Jerusalem Sage, *Phlomis fruticosa.* (Kew.)

Pinus Laricio Moseri. (*J. H. F.* 1900, 53.) Coniferæ. H. A compact dwarf-growing form, the needles of which turn a golden yellow in winter, (Moser, Versailles.)

Pittosporum heterophyllum. (*J. H. F.* 1900, 192.) Pittosporaceæ. G. A much-branched evergreen shrub with papery, smooth, glabrous narrowly lanceolate, ovate or obovate leaves with wavy margins and corymbs of yellowish flowers at the extremity of the branches. Yunnan. (Toulouse B. G.)

Plectranthus Coppini. (*J. H. F.* 1900, 443.) Labiatæ. S. A quickly growing species with root tubers and also aerial ones produced in the axils of the branch nodes. The species is cultivated and the produce sold for food in the Soudan. (Paris B. G.)

Podanthium gracile. (*Gard.* 1900, lvii, 485.) Campanulaceæ. H. A tufted slender stemmed plant, with pale blue flowers freely produced. Asia Minor. (T. Smith.) [*Phyteuma sp.*]

Podanthium lobelioides. (*Gard.* 1900, lvii, 485.) H. Similar to *P. gracile* but of more erect habit. (T. Smith.) Asia Minor. [*Phyteuma lobelioides.*]

***Polemonium confertum melitum.** (*G. C.* 1900, xxvii, 239.) Polemoniaceæ. H. A white-flowered form. Rocky Mountains. (J. Jackman & Son.)

Polygala apopetala. (*S. C. A. A. Cat.* 1900, 71.) Polygalaceæ. G. A tall growing bush "with spikes of large fragrant half yellowish and half purple flowers that change to uniform purple the second day." Lower California.

Polygonum scandens. (*G. C.* 1900, xxviii, 187, f. 55.) Polygonaceæ. H. A twining plant is here figured under the above name, the somewhat leathery leaves of which are dark green above and claret-coloured beneath. (James Veitch & Sons, Ltd.)

Polygonum Spaethii. (*Gt.* 1900, 1138, 182, f. 26.) Polygonaceæ. H. A tall growing species—10 ft. or more—with a general resemblance to *P. sachalinense* but with branched spikes of carmine-red flowers. Schantung, China. (L. Späth, Berlin.)

***Primula kewensis.** (*G. C.* 1900, xxvii, 130, 195, f. 63; *G. M.* 1900, 232, ff.) Primulaceæ. G. A hybrid between *P. floribunda* and *P. verticillata* with intermediate characters. (Kew.)

***Prunus Besseyi.** (*Späth Cat.* 1900, 103.) Rosaceæ. H. A dwarf-growing species related to *P. pumila*; fruit about the size of a cherry, edible. Nebraska.

***Pteris argentea.** (*G. C.* 1900, xxvii, 206.) Filices. Apparently identical with *P. tremula* except in the colour of the fronds which become very pale green or grey. (F. Sander & Co.)

***Pteris droogmantiana.** (*R. H.* 1900, 583; *S. H.* 1900, 487, f. 162.) S. "Elegant bipinnate fronds a mètre in length." Congo Free State. (L' Horticole Coloniale, Brussels.)

Raphiolepis Delacourii. (*R. H.* 1900, 698, t.) Rosaceæ. G. A garden hybrid between *R. indica* and *R. japonica.* (Delacour, Cannes.)

Robinia Pseudacacia ulriciana. (*Späth Cat.* 1900, 112.) Leguminosæ. H. A form with gracefully arching pendulous branches.

***Saxifraga salmonica.** (*G. C.* 1900, xxvii. 309.) Saxifragaceæ. H. The plant mentioned under this name is probably *S. Salomoni*, a hybrid between *S. rocheliana* and *S. burseriana*. Garden Origin.

***Sempervivum Thomsoni.** (*G. C.* 1900, xxviii, 35.) Crassulaceæ. H. A garden cross between *S. arachnoideum* and *S. tectorum.* (R. Lindsay.)

***Senecio auriculatissimus.** (*G. C.* 1900, xxvii, 133: *B. M.* t. 7731.) Compositæ. G. A species with thin, wiry, freely-branched stems; leaves with large basal auricles and a curiously reniform blade, the largest being 3½ in. by 2½ in., dentate, glaucous beneath, dark green above. Flowers bright yellow, in large loose corymbs, each head over an inch in diam., and composed of about a dozen ray-florets surrounding a small disk. British Central Africa. (Kew.)

***Solanum Worsleyi.** (*G. C.* 1900, xxvii, 18, f. 5.) Solanaceæ. G. Closely allied as a species to *S. Melongena*, or an extreme varietal form of it. A scandent plant with stems about 8 ft. high, destitute of spines, leaves ovate-lanceolate, lobed, softly pubescent, 6 in. to 1 ft. long. Fruit about the size of a hen's egg, bright scarlet when ripe, produced singly or in pairs on stalks about 2 in. long. Brazil. (A. Worsley.)

Sophrocattleya Chamberlaini triumphans. (*O. R.* 1900, 27.) Orchidaceæ. G. A garden hybrid between *Cattleya harrisoniana* and *Sophronitis grandiflora.* (J. Chamberlain.)

Stanhopea stenochila. (*G. C.* 1900, xxviii, 369.) Orchidaceæ. S. Flowers comparatively small; sepals pure white, petals apricot-coloured, both with more or less numerous purplish blotches at the basal half; lip ivory white at the base, with purple blotches inside, and paler outside, the middle and interior parts being more or less intensely yellow. Colombia. (Sir Trevor Lawrence.)

***Symphyandra ossetica.** (*Gard.* 1900, lvii, 303.) Campanulaceæ. H. A

plant with a thick stem and fleshy root; the leaves form a rosette, while the pale blue, tubular, bell-shaped flowers are arranged on hanging stalks. Caucasus. (H. Correvon.)

***Tagetes Lemmoni.** (*G. C.* 1900, xxvii, 18, 21, f. 6.) Compositæ. H. A perennial, attaining a height of 3 ft., with glabrous pinnate leaves, and bearing a profusion of yellow flower-heads. Southern Arizona. (W. E. Gumbleton.)

***Thalictrum Chelidoni.** (*G. C.* 1900, xxviii, 167, f. 48.) Ranunculaceæ. H. A dwarf species with ternately divided leaves, pale green above, glaucous beneath, and bearing panicled, violet flowers. Himalaya. (Lady Breadalbane.)

Tulipa galatica. (*G. C.* 1900, xxvii, May 26, suppl. 2.) Liliaceæ. H. Here mentioned as being shown by Van Tubergen, Jnr., Haarlem.

***Tupistra perakensis.** (*G. C.* 1900, xxviii, 287.) Liliaceæ. S. Differs from *T. nutans* in having much narrower, elegant leaves, and erect flower-spikes 8 in. long, the upper half clothed with fleshy shining purple flowers, which differ again in having a pure white disk-like spreading flat stigma. Singapore. (Kew.)

Urostigma subtriplinervium. (*R. H.* 1900, 597, f. 257.) Urticaceæ. S. A tree with large handsome green leaves with ivory-white nerves. Brazil. (André, Paris.)

Vanda cærulescens Regnieri. (*R. H.* 1900, 634, t.) G. Orchidaceæ. S. A form with deeper-coloured flowers. (Regnier, Fonténay-sous-Bois.)

***Veratrum californicum.** (*G. C.* 1900, xxviii, 22.) Liliaceæ. H. A tall, growing species 5–6 ft. high, with a branching panicle of greenish-white flowers. North - Western America. (Kew.)

***Verbascum longifolium.** (*B. M.* t. 7707.) Scrophulariaceæ. H. A noble species, with bold, undulating foliage covered with grey down, and dense spikes of large yellow flowers. S. Italy, &c. (Kew.)

Viguiera tomentosa. (*S.C.A.A. Cat.* 1900, 76.) Compositæ. G. A tall, growing species with silvery, woolly leaves, and ample corymbs of yellow flower heads. Lower California.

Vriesia erecta. (*J. H. F.* 1900, 263.) Bromeliaceæ. S. A garden hybrid between *V. Poelmani* and *V. Rex*. (Luxemburg Garden, Paris.)

Vriesia imperialis. (*J. H. F.* 1900, 847.) S. A garden hybrid between *V. mirabilis* and *V. Rex*. (Duval & Son, Versailles.) [There is another *Vriesia imperialis* in cultivation, which is now referred to Tillandsia regina.]

Xanthosoma Hoffmanni. *J. H. F.* 1900, 16, f. 2.) Araceæ. S. Leaf-stalk whitish with dark purple blotches, leaf pedatisect with 5 to 7 oval lobes of a dark green with bluish metallic reflections. Spathe with a green tube purple inside, the limb white. Mexico. (Micheli, Geneva.)

Zygocolax wiganiana. (*O. R.* 1900, 58; *G. M.* 1900, 121, f.) Orchidaceæ. G. A garden hybrid between *Zygopetalum intermedium* and *Colax jugosus*. (Sir F. Wigan.)

Zygocolax woodlandsense. (*Gard.* 1900, lvii., No. 1,469, vii.) G. A garden hybrid between *Zygopetalum maxillare Gautieri* and *Colax jugosus*. (Sir F. Wigan.)

Zygopetalum Ballii. (*G. C.* 1900, xxvii, 143, f. 47.) G. Allied to *Z. rostratum*; sepals white, tinged with rose-purple, petals rose-purple freckled with white, lip white with purple blotches around the crest. (G. Shorland Ball.)

ROYAL BOTANIC GARDENS, KEW.

BULLETIN

OF

MISCELLANEOUS INFORMATION.

APPENDIX IV.—1901.

LIST of the STAFFS of the ROYAL BOTANIC GARDENS, Kew, and of Botanical Departments and Establishments at Home, and in India and the Colonies, in Correspondence with Kew.

* Trained at Kew. † Recommended by Kew

Royal Botanic Gardens, Kew:—

Director - - - - -	Sir W. T. Thiselton-Dyer, K.C.M.G., C.I.E., F.R.S., LL.D., Ph.D., M.A., F.L.S.
Private Secretary - - -	——
Assistant (Office) - - -	H. H. W. Pearson, M.A., F.L.S.
" " - - -	*John Aikman.
" " - - -	*William Nicholls Winn.

Keeper of Herbarium and Library	*William Botting Hemsley, F.R.S., F.L.S.
Principal Assistant (Phanerogams)	Otto Stapf, Ph.D., A.L.S.
" " (Cryptogams) -	George Massee, F.L.S.
Assistant (Herbarium) - -	Nicholas Edward Brown, A.L.S.
" " - -	*Robert Allen Rolfe, A.L.S.
" " - -	Charles Henry Wright, A.L.S.
" " - -	*Sidney Alfred Skan.
" " - -	Thomas Archibald Sprague, B.Sc.
" for India - - -	Stephen T. Dunn, B.A., F.L.S.

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Honorary Keeper, Jodrell Laboratory - - - - -	Dukinfield Henry Scott, F.R.S., M.A., Ph.D., F.L.S.
Keeper of Museums - - -	John Masters Hillier.
Assistant (Museums) - - -	*John H. Holland.
Preparer - - - - -	George Badderly.
Curator of the Gardens - -	William Watson.
Assistant Curator - - -	*William J. Bean.
Foremen :—	
Herbaceous Department - -	*Walter Irving.
Greenhouse and Ornamental Department.	Frank Garrett.
Arboretum - - - -	*William Dallimore.
Tropical Department - -	*Walter Hackett.
Temperate House - - -	*Charles P. Raffill.

Cambridge.—University Botanic Garden :—

Professor - - -	Harry Marshall Ward, M.A., D.Sc., F.R.S., F.L.S.
Secretary to Botanic Garden Syndicate	A. C. Seward, M.A., F.R.S.
Curator - - -	*Richard Irwin Lynch, A.L.S.

Dublin.—Royal Botanic Gardens, Glasnevin :—

Keeper - - -	Frederick W. Moore, A.L.S.

Trinity College Botanic Gardens :—

Professor - - -	E. Perceval Wright, M.A., M.D., F.L.S.
Curator - - -	*F. W. Burbidge, M.A. F.L.S.

Edinburgh.—Royal Botanic Garden :—

Regius Keeper - -	Isaac Bayley Balfour, M.D., D.Sc., F.R.S., F.L.S.
Head Gardener - -	A. D. Richardson.
Assistant Gardener -	*R. L. Harrow.

Glasgow.—Botanic Gardens :—

University Professor -	F. O. Bower, M.A., D.Sc., F.R.S., F L.S.
Curator - - -	*Daniel Dewar.

Oxford.—University Botanic Garden :—

Professor - - -	SydneyH.Vines,M.A., D.Sc., F.R.S., F.L.S.
Curator - - -	*William Baker.

COLONIES.

Antigua.—Botanic Station :—

	Curator - - -	*W. N. Sands.
	Agricultural Superintendent.	F. R. Shepherd.

Barbados.—Dodd's Reformatory, Botanic Station :—

	Superintendent -	John R. Bovell, F.L.S., F.C.S.
	Assistant Superintendent.	C. E. Stoute.
	Acting Lecturer in Agricultural Science.	Longfield Smith, B.Sc., Ph.D.

Bermuda.—Botanic Station :—

	Superintendent -	†G. A. Bishop.

British Central Africa.—Scientific Department :—

Zomba - -	Head of Department -	J. McClounie.
	Forester - - -	*J. M. Purves.

British East Africa.—

East Africa Protectorate.—

——

Uganda.—Botanic Station :—

	Curator - - -	†Alexander Whyte, M.A., F.L.S.
	Assistant Curator -	*John Mahon.

Zanzibar - -	Director of Agriculture.	R. N. Lyne, F.L.S.
	Assistant Director -	——

Dunga Experimental Station :—

	Superintendent -	W. Buzzacott.

British Guiana.—Botanic Gardens :—

Georgetown -	Superintendent and Government Botanist.	*George S. Jenman, F.L.S.
	Head Gardener -	†John F. Waby.
	Agricultural Assistant	*Robert Ward.
	Promenade Garden :—	
	Head Gardener -	William Jackson.
Berbice - -	Keeper - - -	Richard Hunt.

British Honduras.—Botanic Station :—

	Curator - - -	Eugene Campbell.

Canada.—		
Ottawa - -	Dominion Botanist -	Prof. John Macoun, M.A., F.R.S.C., F.L.S.
	Assistant „ .	Jas. M. Macoun.
	Director of Government Experimental Farms.	Prof. Wm. Saunders, LL.D., F.R.S.C., F.L.S.
	Director's Assistant and Superintendent of Botanic Garden.	W. T. Macoun.
	Botanist and Entomologist.	James Fletcher, F.L.S.
Montreal - -	Director, University Botanic Garden.	Prof. D. P. Penhallow, B.Sc.
Cape Colony.—		
	Government Botanist	Prof. MacOwan, B.A., F.L.S.

Ceylon.—Department of Royal Botanic Gardens :—

	Director - - -	†John C. Willis, M.A., F.L.S.
	Mycologist and Assistant Director.	J. B. Carruthers, F.L.S.
	Government Entomologist.	E. E. Green.
Peradeniya -	Curator - - -	*Hugh F. McMillan.
	Clerk - - -	R. H. Pereira.
	Draughtsman - -	W. de Alwis.
Hakgala - -	Superintendent - -	*William Nock.
	Clerk and Foreman -	A. Perera.
Henaratgoda -	Conductor - -	S. de Silva, Arachchi.
Anurà̀dhapura	„ - - -	D. F. de Silva.
Badulla - -	„ - - -	D. D. Fernando.

Dominica.—Botanic Station :—

Curator - - -	*Joseph Jones.
Agricultural Instructor.	G. F. Branch.

Agricultural School :—

Officer in Charge	*D. Tannock.

Falkland Islands.—Government House Garden :—

Head Gardener - -	*Albert Linney.

Federated Malay States.—Experimental Plantations :—

Superintendent	*Stanley Arden.

Perak (Taiping).—Government Gardens and Plantations :—

Superintendent - -	*Robert Derry.

Fiji.—Botanic Station :—

Curator - - -	*Daniel Yeoward.

Gambia.—Botanic Station :—

	Curator - - -	——

Gold Coast.—Botanic Station :—

	Curator - - -	*William H. Johnson, F.L.S.
	Assistant Curator -	——

Grenada.—Botanic Garden :—

	Curator - - -	*Walter E. Broadway.

Hong Kong.—Botanic and Afforestation Department :—

	Superintendent - -	†Charles Ford, F.L.S.
	Assistant Superintendent	*W. J. Tutcher.

Jamaica.—Department of Public Gardens and Plantations :—

	Director - - -		†William Fawcett, B.Sc., F.L.S.
	Travelling Instructor		*William Cradwick.
Hope Gardens -	Superintendent -	-	*William Harris.
Hope Experiment Station.	,,	-	*Thomas J. Harris.
Castleton Garden	,,	-	*William J. Thompson.
Cinchona (Hill Garden).	,,	-	——
Kingston Parade Garden.	,,	-	John Campbell.
King's House Garden.	,,	-	James Briscoe.
	Lecturer in Agricultural Science	-	†W. R. Buttenshaw, M.A., B.Sc.

Lagos.—Botanic Station :—

	Curator - - -	*E. W. Foster.
	Assistant - - -	*T. B. Dawodu.

Malta.—Argotti Botanic Garden :—

	Director - -	Dr. Francesco Debono.

Mauritius.—Department of Forests and Botanic Gardens :—

Pamplemousses -	Director - - -		J. Vankeirsbilck.
	1st Assistant - -		Paul Koenig.
	2nd ,, - - -		S. E. Pougnet.
	Overseer - - -		J. Powell.
Curepipe - -	Overseer - - -		F. Bijoux.
Reduit - -	,, - - -		W. A. Kennedy.

Montserrat.—Botanic Station :—

	Curator - - -	——
	Agricultural Instructor.	*A. J. Jordan.

Natal.—Botanic Gardens :—

Durban - -	Curator - - -	John Medley Wood, A.L.S.
	Head Gardener - - -	*James Wylie.
Pietermaritzburg	Curator - - -	G. Mitchell.

New South Wales.—Botanic Gardens :—

Sydney - -	Director and Government Botanist.	J. H. Maiden, F.L.S.
	Superintendent -	George Harwood.
	Botanical Assistant -	E. Betche.

Technological Museum :—

	Curator - - -	R. T. Baker, F.L.S.

New Zealand :—

Wellington.—Colonial Botanic Garden :—

	Head Gardener - -	G. Gibb.
Dunedin - -	Superintendent - -	J. McBean.
Napier - -	„ - -	W. Barton.
Invercargill -	Head Gardener - -	Thomas Waugh.
Auckland - -	Ranger - - -	William Goldie
Christchurch -	Head Gardener - -	*Ambrose Taylor.

Queensland.—Botanic Department :—

Brisbane - -	Colonial Botanist -	F. M. Bailey, F.L.S.

Botanic Gardens :—

	Director - - -	*Philip MacMahon.
	Overseer - - -	J. Tobin.

Acclimatisation Society's Gardens :—

	Secretary and Manager	Edward Grimley.
	Overseer - - -	James Mitchell.
Rockhampton -	Superintendent - -	J. S. Edgar.

St. Kitts-Nevis.—Botanic Station :—

	Curator - - -	*William Lunt.

St. Lucia.—Botanic Station :—

	Curator - - -	*John Chisnall Moore.
	Agricultural Instructor.	George S. Hudson.

St. Vincent.—Botanic Station :—

	Curator - - -	*Henry Powell.

Agricultural School :—

	Officer in Charge -	*M. McNeill.

Sierra Leone.—Botanic Station :—

	Curator - - -	*J. P. Quinton.

South Australia.—Botanic Gardens :—

Adelaide	Director	Maurice Holtze, F.L.S.
Port Darwin	Curator	Nicholas Holtze.

Southern Nigeria.—Botanic Garden :—

Old Calabar	Curator	——
	Assistant Curator	——

Straits Settlements.—Gardens and Forest Department :—

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	Assistant Superintendent.	*Walter Fox.
Penang	Assistant Superintendent.	†Charles Curtis, F.L.S.

Tasmania.—Botanic Gardens :—

Hobart Town	Superintendent	F. Abbott.

Tobago.—Botanic Station :—

Curator	*Henry Millen.
Cacao Instructor	——

Trinidad.—Royal Botanic Gardens :—

Superintendent	†John H. Hart, F.L.S.
Assistant „	*W. Leslie.

Victoria.—Botanic Gardens :—

Melbourne	Curator	W. R. Guilfoyle.

National Herbarium :—

Curator	J. G. Luehmann, F.L.S.

Virgin Islands.—

Agricultural Instructor.	C. W. Seale.

West Indies.—Imperial Department of Agriculture :—

Barbados	Commissioner	D. Morris, C.M.G., D.Sc., M.A., F.L.S.
	Travelling Superintendent.	G. W. Smith.
	Technical Assistant	W. G. Freeman, B.Sc., F.L.S.
	Entomologist	†H. M. Lefroy, B.A.
	Lecturer in Agricultural Science.	†Albert Howard, B.A., F.C.S.
	Honorary Consulting Chemist.	Prof. J. B. Harrison, M.A., F.I.C., F.C.S.
	„ „	Prof. J. P. d'Albuquerque, M.A., F.I.C., F.C.S.

Western Australia.—Department of Agriculture :—

Perth- -	- Botanist - - -	Alexander Morrison.
	Consulting Botanist -	F. Turner, F.L.S. (Sydney).

INDIA.

Botanical Survey.—Director, Major D. Prain, M.B., I.M.S., F.L.S., F.R.S.E.

Bengal, Assam, Burma; the Andamans and Nicobars; North-East Frontier Expeditions :—

Superintendent of the Royal Botanic Gardens, Calcutta	Major D. Prain, M.B., I.M.S., F.L.S., F.R.S.E.

Bombay, including Sind :—

Professor of Botany, College of Science, Poona -	G. A. Gammie.

Madras: the State of Hyderabad and the State of Mysore :—

Government Botanist, Madras.	†C. A. Barber, M.A., F.L.S.

North-Western Provinces and Oudh; the Punjab; the Central Provinces; Central India; Rajputana; North-West Frontier Expeditions :—

Director of the Botanic Department, Northern India, Saharanpur, N.W.P. - -	†J. F. Duthie, B A., F.L.S.

Bengal :—

Reporter on Economic Products to the Government of India, Indian Museum, Calcutta	†George Watt, M.B., C.M., C.I.E., F.L.S.
Assistant Reporter -	†I. H. Burkill, M.A., F.L.S.

Bengal.—Department of Royal Botanic Gardens :—

Calcutta (Seebpore) Superintendent -	Major D. Prain, M.B., I.M.S., F.L.S., F.R.S.E.
Curator of Herbarium.	Lieutenant Gage, I.M.S.
Cryptogamic Botanist.	†E. J. Butler, M.B., B.Ch.
Curator of Garden -	*G. T. Lane.
Assistant „ -	*N. Gill.
Probationer -	*H. F. Green.

Calcutta.—Agri-Horticultural Society of India :—

	Secretary - -	P. Lancaster.
	Superintendent -	A. J. B. Gisseleire.
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	1st Assistant -	*Joseph Parkes.
	2nd „ -	*Amos Hartless.
	3rd „ -	*George H. Cave.
	4th „ -	*Oliver T. Hemsley.

Darjeeling.—Lloyd Botanic Garden :—

	Curator - - -	*W. A. Kennedy.

Darbhangah.—Maharajah's Garden :—

	Superintendent -	Herbert Thorn.

Bombay.—

Poona - -	——	——
	Professor of Botany	G. A. Gammie.

Ghorpuri.—Botanic Garden :—

	Superintendent -	P. G. Kanitkar.

Bombay.—Municipal Garden :—

	Superintendent -	C. D. Mahaluxmivala.

Karachi.—Municipal Garden :—

	Superintendent -	——

Central Provinces.—

Nagpur - -	Superintendent of Public Gardens.	*J. Horne Stephen

Madras.—Botanic Department :—

Ootacumund -	Government Botanist	†C. A. Barber, M.A., F.L.S.
	Director of Government Cinchona Plantations.	W. M. Standen.
	Curator of Gardens and Parks.	*Robert L. Proudlock.

Madras.—Agri-Horticultural Society :—

	Hon. Secretary - -	A. G. Bourne, D.Sc., F.R.S.
	Superintendent -	*B. Cavanagh.

Native States.—

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Baroda - - -	„	-	*G. H. Krumbiegel.
Gwalior - -	„	-	†C. Maries, F.L.S.
Morvi - - -	„	-	*Joseph Beck.
Travancore (Trivandrum)	„	-	H. S. Ferguson, F.L.S.
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North-West Provinces.—

Agra (Taj Garden)	Superintendent	-	*A. E. P. Griessen.
Allahabad - -	„	-	*H. J. Davies.
Cawnpur - -	„	-	G. H. T. Mayer.
Kumaon (Ramghur)	„	-	*F. W. Seers.
Lucknow - -	„	-	*Matthew Ridley.
Saharanpur and Branch Garden, Mussoorie.	„	-	William Gollan.

Punjab.—

Lahore - -	Superintendent	-	H. G. Hein.